

Drakes Bay Oyster Company Special Use Permit  
Environmental Impact Statement

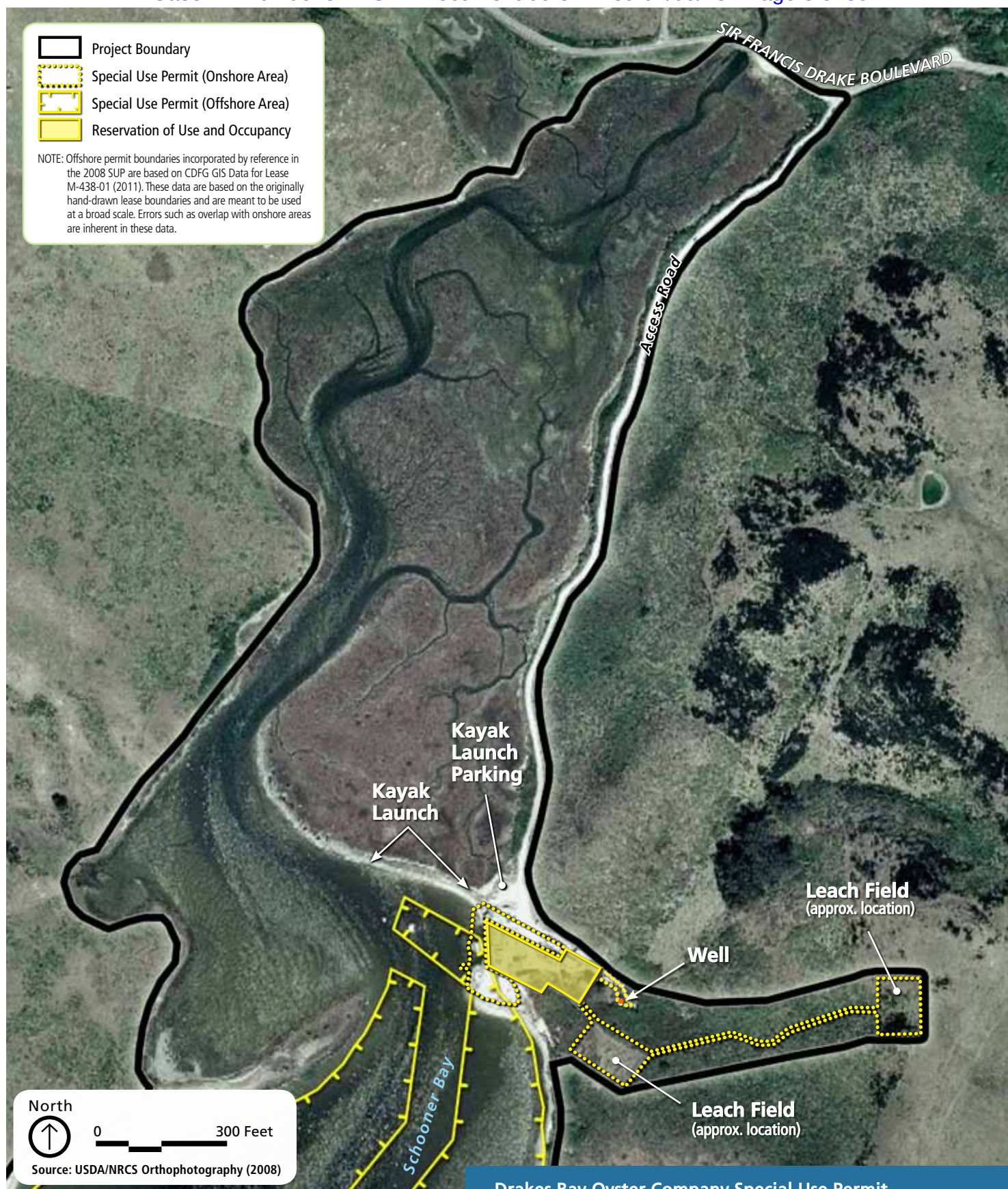


National Park Service  
U.S. Department of the Interior  
  
Point Reyes National Seashore

FIGURE 1-3  
Project Area Boundary







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FIGURE 1-4

Project Area Boundary: DBOC Onshore Area of Operation

## PURPOSE AND SIGNIFICANCE OF POINT REYES NATIONAL SEASHORE

The Seashore is located at a rich, complex convergence of land and sea, culture and nature, urban and rural. This is where continental and oceanic plates of the Earth's crust collide, creating the unique geological formations above (or atop) the San Andreas Fault. The Seashore's dynamic geologic foundations produce extraordinary biodiversity, where the rivers of the coastal range meet the sea, and where marine, estuarine, freshwater, and terrestrial ecosystems overlap. Human communities overlap here too: This is where European voyagers and the indigenous peoples of America's Pacific Coast are believed to have first encountered each other (Sadin 2007).

The Seashore lies within an area recognized locally, nationally, and globally as a center of biodiversity. The Seashore hosts more than 800 native plant species, over 490 resident and migratory bird species, anadromous fish, rare and elusive amphibians, and a unique assemblage of mammals such as bobcat (*Felis rufus*), elephant seal (*Mirounga angustirostris*), harbor seal (*Phoca vitulina*), mountain lion (*Puma concolor*), Point Reyes mountain beaver (*Aplodontia rufa*), and tule elk (*Cervus canadensis*). Drakes Estero is an exceptional nursery that provides abundant food, resting habitat, and shelter for a wide array of marine organisms and migratory waterbirds, including brant and North American species of pelicans. The northern California coast, including the Seashore, is part of one of the few major coastal upwelling regions in the world (Hill et al. 1998). The Seashore is one of the best locations on the West Coast to watch the migration of the Pacific gray whale and to observe other animals that live their lives in the open-ocean such as albatrosses, dolphins, and humpback whales.

Marine and land boundaries are shared with the Gulf of the Farallones National Marine Sanctuary, Golden Gate National Recreation Area, and Tomales Bay State Park. In 1988, the United Nations Educational, Scientific, and Cultural Organization Man in the Biosphere program designated the Central California Coast Biosphere Reserve (CCCBBR) under the International Biosphere Program; CCCBBR includes the entire Seashore, the Golden Gate National Recreation Area, and other public lands in the region. Four state designated "Areas of Special Biological Significance" are located within the Seashore: Bird Rock, Point Reyes Headlands, Double Point, and Duxbury Reef. In addition, the Phillip Burton Wilderness Area is unique in that it is the only wilderness area between Canada and Mexico that includes marine waters (wilderness.net 2011).

As set forth in the NPS Organic Act, the fundamental purpose of units of the national park system is "to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations" (U.S.C. title 16, section 1 [16 U.S.C. 1]). Units of the national park system also generally have their own specific purposes set out in their legislation. In 1962, Congress established Point Reyes National Seashore "to save and preserve for the purposes of public recreation, benefit, and inspiration, a portion of the diminishing seashore of the United States that remains undeveloped" (PL 87-657, section 1, September 13, 1962, 76 Stat. 538, codified at 16 U.S.C. 459c). President John F. Kennedy signed the Point Reyes Act (PL 87-657) into law on September 13, 1962 (appendix B).

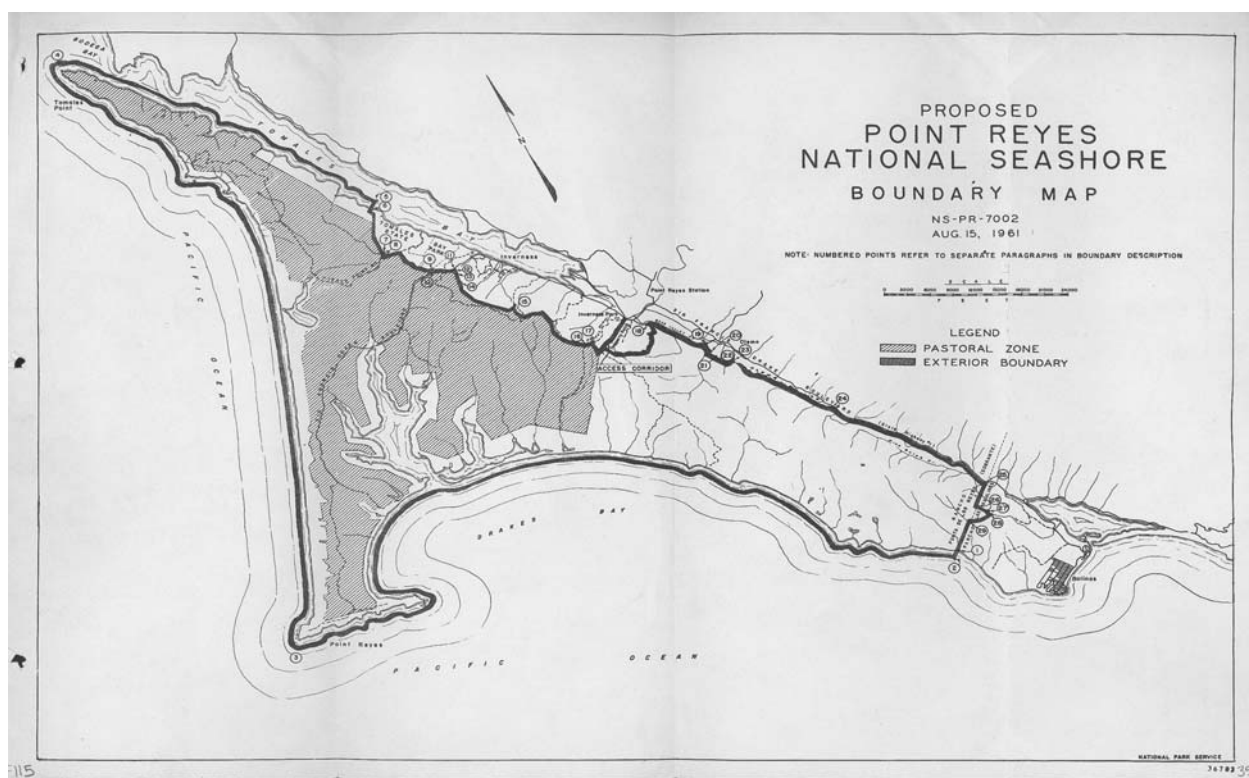
With strong support and collective efforts from leaders working at the regional and national levels, as well as citizen activists, two bills were introduced to Congress in 1959 to seek authorization of a national



seashore on Point Reyes Peninsula. These bills, as constructed, did not advance fully, as local governments were concerned with issues such as loss of county tax revenue and infringement on the property rights of the ranchers and other landowners. As environmentalists, local managers, and ranchers began to realize that creation of the Seashore was the way to preserve and protect the conditions and livelihoods on the Point Reyes Peninsula from the forceful push of commercial land development, partnering began. In enacting the law establishing the Seashore, Congress considered both the cost of land acquisition and the fate of the existing dairy farms and cattle ranches within the potential boundaries. The enabling legislation specifically recognized the dairying and ranching operations by limiting the use of eminent domain within an area known as the “pastoral zone.” The pastoral zone was depicted on map number NS-PR-7002, dated August 15, 1961 (shown below).

Congress ratified this map by specifically referring to it in section 4 of the legislation, which states the following:

No parcel of more than five hundred acres within the zone of approximately twenty-six thousand acres depicted on map number NS-PR-7002, dated August 15, 1961 . . . shall be acquired without the consent of the owner so long as it remains in its natural state, or is used exclusively for ranching and dairying purposes including housing directly incident thereto. (PL 87-657, section 4, September 13, 1962, 76 Stat. 538)



Map NS-PR-7002, showing the pastoral zone of Point Reyes National Seashore. (Image courtesy of NPS.)

The section additionally defined “ranching and dairying purposes” as “such ranching and dairying, primarily for the production of food, as is presently practiced in the area” (PL 87-657, section 4, September 13, 1962, 76 Stat. 538). The administrative history of the Seashore identifies several rationales

behind the creation of the pastoral zone and the special treatment of ranching and dairying operations within the zone: responding to the concerns of ranchers, lessening the cost of initial land acquisitions, stabilizing the county's property tax base, and preventing commercial development within the area.

Despite the presence of JOC at the time of the deliberations, Drakes Estero and an upland buffer including the oyster operation were not identified as part of the pastoral zone depicted on map number NS-PR-7002. Thus, section 4 of the enabling legislation did not apply to the mariculture operations in and around Drakes Estero.

Although the enabling legislation did not specifically address the oyster operation, oyster operations were discussed in the 1962 legislative history. The House Report accompanying the legislation in 1962 mentions "small organizations engaged in oyster farming and fishing operations on Drakes Estero, Tomales Bay, and Point Reyes" (H. Rep. No. 87-1628, reprinted in 1962 U.S.C.C.A.N. 2500, 2504).

The report further notes that the committee had been advised that "none of these activities, as presently conducted, is incompatible with the plans of the National Park Service" and that there was an understanding with the owners of these properties that the government would have the first right to acquire the properties in the event the owners wished to dispose of them (H. Rep. No. 87-1628, reprinted in 1962 U.S.C.C.A.N. 2500, 2504).

In 1970, Congress removed section 4 from the legislation to address concerns around the eminent domain clause, through subsection 2b of the act of April 3, 1970 (PL 91-223, April 3, 1970, 84 Stat. 90), and in 1978 Congress added language authorizing the leasing of federally owned land that was agricultural land prior to its acquisition. Section 318(b) of PL 95-625 (1978) states the following:

Where appropriate in the discretion of the Secretary, he or she may lease federally owned land (or any interest therein) which has been acquired by the Secretary under this Act, and which was agricultural land prior to its acquisition. Such lease shall be subject to such restrictive covenants as may be necessary to carry out the purposes of this Act. Any land to be leased by the Secretary under this section shall be offered first for such lease to the person who owned such land or was a leaseholder thereon immediately before its acquisition by the United States. (PL 95-625, title III, section 318[b], November 10, 1978, 92 Stat. 3467, 3487, codified at 16 U.S.C. 459c-5[a])

Section 318(c) also defined "agricultural property" to mean "lands which were in regular use for, or were being converted to agricultural, ranching, or dairying purposes as of May 1, 1978, together with the residential and other structures related to the above uses of the property" (PL 95-625, title III, section 318[c], 92 Stat. 3487, codified as amended at 16 U.S.C. 459c-5[b]).

## **ESTABLISHMENT OF WILDERNESS AT POINT REYES NATIONAL SEASHORE**

The National Wilderness Preservation System was established by Congress in 1964 to ensure that some lands of the United States would be preserved and protected in their natural condition for the permanent good of the people. Such federally owned areas are designated by Congress as "wilderness areas." An

area of wilderness is further defined as “an area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation which is protected and managed so as to preserve its natural conditions” (16 U.S.C. 1132).

During the 1970s, NPS studied the Seashore, as directed by the Wilderness Act of 1964, to determine the suitability of designating areas of the Seashore as wilderness. In 1972, the Seashore published its initial recommendation for an area of about 5,150 acres for the purpose of preservation of wilderness areas (NPS 1972b). Recognizing the uniqueness of the resources on the Point Reyes Peninsula and the threats that ensuing commercial and land development posed to other surrounding lands, NPS recommended 10,600 acres be designated as wilderness (NPS 1974). Congress ultimately decided in 1976 to designate more than 33,000 acres as wilderness or potential wilderness, including 25,370 acres as wilderness and another 8,003 acres of land and water as potential wilderness (PL 94-544, October 18, 1976, 90 Stat. 2515 and PL 94-567, October 20, 1976, 90 Stat. 2695). While the legislative language clearly articulates acreage in section 1, the map filed with the committee, as required under section 2 of the legislation, calculated that the actual acreage of those lands and waters is 24,200 acres of wilderness and 8,530 acres of potential wilderness. The waters of Drakes Estero were included in the potential wilderness designations, but the upland areas used for shellfish processing operations were not. Potential wilderness additions are defined as lands that do not qualify for immediate designation as wilderness “due to temporary nonconforming or incompatible conditions” (NPS 2006d, section 6.2.2.1). The House Committee Report accompanying the wilderness bill states the following about the potential wilderness additions:

As is well established, it is the intention that those lands and waters designated as potential wilderness additions will be essentially managed as wilderness, to the extent possible, with efforts to steadily continue to remove all obstacles to the eventual conversion of these lands and waters to wilderness status. (H. Rep. No. 94-1680, September 24, 1976)

PL 94-567 also provided an administrative mechanism for the conversion of potential wilderness to full wilderness once “all uses thereon prohibited by the Wilderness Act have ceased” (PL 94-567, section 3, October 20, 1976). In order for potential wilderness to be converted, NPS must publish a notice in the Federal Register that all nonconforming uses within the potential wilderness have ceased. Upon such publication, the congressionally designated potential wilderness gains congressionally designated wilderness status.

In addition to the wilderness provisions contained in PL 94-544 and 94-567, Congress amended the provisions of the Seashore enabling legislation by adding language elaborating on the original purposes of the Seashore. Rather than focusing on recreational or other aspects of the Seashore, Congress directed that the Seashore be administered “without impairment of its natural values, in a manner which provides for such recreational, educational, historic preservation, interpretation, and scientific research opportunities as are consistent with, based upon, and supportive of the maximum protection, restoration, and preservation of the natural environment within the area” (PL 94-544, section 4, October 18, 1976, 90 Stat. 2515, codified at 16 U.S.C. 459c-6; and PL 94-567, section 7, October 20, 1976, 90 Stat. 2695, codified at 16 U.S.C. 459c-6).

In February of 2004, the Department of the Interior, Office of the Solicitor issued a legal opinion regarding the meaning of the 1976 legislation designating Drakes Estero as potential wilderness. Based on

the language of the law and its legislative history, the opinion concluded that NPS was mandated to convert the potential wilderness in Drakes Estero to full wilderness as soon as the nonconforming use could be eliminated (DOI 2004). The oyster operation in Drakes Estero was dependent on the 40-year RUO that Charles Johnson had retained when he sold his 5-acre parcel to NPS in 1972. The RUO expires on November 30, 2012, making this date the earliest date on which the obstacle to full wilderness designation would cease. In October 2009, section 124 of PL 111-88 provided the Secretary discretionary authority to issue a new SUP for a period of 10 years notwithstanding the intent of the 1976 wilderness legislation.

## **COMMERCIAL SHELLFISH OPERATIONS IN DRAKES ESTERO**

### **OVERVIEW FROM 1930 TO 2004**

Mariculture developers first planted oyster beds in the Tomales Bay area around the turn of the 20th century. Throughout the 1930s, CDFG conducted successful experimentation with nonnative species to create commercial shellfish aquaculture in the state. In a 1935 survey to assess the suitability of California bays and inlets for commercial shellfish aquaculture, Bonnot stated regarding Drakes Estero: “No oysters were found growing there. Several small plants of Japanese seed oysters were made in 1932. The oysters grew remarkably well and in five months were about two-thirds market size. A project of an experimental nature on a much larger scale is now being promoted...” (Bonnot 1935). In a later report on the California oyster industry, Bonnot noted that Humboldt Bay began to establish artificial culture of the native oyster (*Ostrea lurida*), using the already existing natural beds. Research was conducted to determine the necessary biological conditions for this success of the native oyster in California (Bonnot 1937). Oyster growers, in an attempt to produce a faster- and larger-growing product, introduced nonnative species of oyster to several water bodies in California, including Drakes Estero. The success of the nonnative Pacific oyster (*Crassostrea gigas*) in Tomales Bay and Drakes Estero contributed to the establishment of new companies and the retooling of existing oyster businesses. In 1938, the original Drakes Bay Oyster Company (no relation to the present-day DBOC) built a small “opening” plant on the banks of Drakes Estero near the head of Creamery Bay, selling its freshly shucked oysters in San Francisco. The plant operated within Drakes Estero until 1945. The 5-acre plant property was not owned by the oyster company but was part of a larger estate (Caywood and Hagen 2011).

Due to World War II, Pacific oyster seed shipments ceased and oyster operations declined. This interruption, coupled with other factors, caused some oyster operations in the area to dissolve. In 1946, the Drakes Estero oyster allotment was transferred to Larry Jensen (Caywood and Hagen 2011). During the Jensen tenure, the ownership of the 5-acre parcel containing the processing plant was integrated with the state water allotment lease in Drakes Estero. In 1951 and 1952, both the nonnative Pacific and eastern oysters (*Ostrea virginica*) were grown within Drakes Estero by the original Drakes Bay Oyster Company (CDFG 2011c). In April 1954, Larry Jensen entered into an “agreement of sale” with Van Camp Seafood for his oysters, state oyster allotments, and the 5 acres of upland real property that accompanied the state water bottom leases. In turn, it was quickly transferred to the Coast Oyster Company (Caywood and Hagen 2011; CDFG 1954, 1955).



In 1958, Charles W. Johnson, a seed buyer for the Coast Oyster Company, settled in California and took over the oyster operation in Drakes Estero. He soon founded JOC. Charles Johnson cultured oysters in Drakes Estero and operated onshore processing facilities from 1961 through 2003. Johnson purchased 5 acres of onshore land where the existing processing facilities were located in 1961. He and his wife improved upon an L-shaped processing plant. A frame building used for opening oysters, a dock, and five small cottages or cabins were preexisting. By 1963, the Johnsons had built two additions to the processing plant, one serving as a sorting room and the other for restrooms, and expanded one of the cabins for their residence (Caywood and Hagen 2011).

Although the Seashore was established in 1962, NPS did not acquire ownership of all lands and waters within the Seashore's boundary immediately. In 1965, the state-held water bottoms of Drakes Estero were conveyed to NPS by the State of California. As of 1965, however, NPS did not own the upland areas where the oyster processing facilities were located. NPS purchased fee title to the 5-acre upland parcel from Johnson in 1972. As part of the purchase agreement, Johnson elected to retain a 40-year RUO over 1.5 acres of the 5-acre parcel. The RUO allowed for "processing and selling wholesale and retail oysters, seafood and complimentary food items, the interpretation of oyster cultivation to the visiting public and residential purposes reasonably incidental thereto" (NPS 1972a).

Even though the water bottoms in Drakes Estero were conveyed to the United States in 1965, the state has continued to issue state water bottom leases for shellfish cultivation in Drakes Estero. The continued issuance of state water bottom leases has created confusion and is inconsistent with the NPS's ownership and jurisdiction over Drakes Estero. Should the Secretary issue a new permit to DBOC under section 124, as a condition of receiving that permit, DBOC would be required to surrender its state water bottom lease to the CFGC prior to issuance of a new SUP by NPS.

In 1979, the state consolidated Oyster Allotment Nos. 2 and 72 into one Mariculture Lease (M-438-01)<sup>3</sup> in conformance with a new standard numbering system. Lease M-438-01 was described as two parcels (see figure 1-3): Parcel 1 contains 343 acres on the east side of Drakes Estero and Parcel 2 contains approximately 706 acres on the west side of Drakes Estero. A 1-acre parcel designated as Mariculture Lease M-438-02<sup>4</sup> lies within Parcel 2. Parcels 1 and 2 contain approximately 1,049 acres<sup>5</sup> and together compose Lease M-438-01 (see figure 1-3).

In 1979, Lease M-438-01 was allotted for the purpose of culturing Pacific oysters and European flat oysters (*Ostrea edulis*). The authorized methods of oyster cultivation in 1979 included bottom, rack, and stake cultures (CDFG 1979a). The 1-acre Lease M-438-02 was allotted for the sole purpose of culturing purple-hinged rock scallops (*Hinnites multirugosus*) (scallops) in accordance with provisions of section 6400 of the California Fish and Game Code. As permitted, scallops were to be confined and cultivated on racks and in trays. No other mode of operation or culture was authorized at the time (CDFG 1979b).

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<sup>3</sup> Referred to as Lease M-438-01 in remainder of document.

<sup>4</sup> Referred to as Lease M-438-02 in remainder of document.

<sup>5</sup> Since the consolidation of several allotments into Lease M-438-01 in 1979, the lease language has specified that the lease area is made up of two parcels totaling approximately 1,059 acres; however, the geographic information system (GIS) data provided by CDFG in 2011 for this lease area measures 1,049 acres. For the purposes of this EIS, all area calculations are based on GIS data. Therefore, the latter measurement is used to represent existing conditions throughout this EIS.

In August 1993, JOC made a request to CDFG to begin the culture of Manila clams (*Venerupis philippinarum*, also known as *Tapes japonica* and *Venerupis japonica*) in Lease M-438-01 (Studdert 1993<sup>xiv</sup>). In an October 7, 1993, meeting, CFGC authorized JOC to cultivate Manila clams in an amendment to Lease M-438-02. The CFGC meeting minutes documenting the approval of the request state “Lease M-438-02 is a small, 1-acre lease which has been previously used by the JOC in experimental culture of species other than oysters. Johnson Oyster Company would now like to investigate if conditions in Drakes Estero are suitable for culture of Manila clams” (CFGC 1993). CDFG sent a letter to JOC confirming that Manila clams had been added to Lease M-438-02, and JOC signed the lease amendment.

In November 1989, the Marin County Planning Department contacted Charles Johnson regarding violations involving the enlargement of the processing plant and installation of mobile homes without appropriate permits. These activities were also inconsistent with the terms of the RUO. Failure to obtain a coastal development permit also placed JOC in violation of California Coastal Act provisions. However, to bring JOC into compliance with federal, state, and local codes and regulations, a number of facility replacements and best practices were still needed, including an upgrade to the septic system (Caywood and Hagen 2011). The expanded septic system plans were eventually submitted to NPS by JOC and evaluated for compliance as part of the 1998 Environmental Assessment (EA) which included several other activities, including removal of unpermitted mobile homes and construction of new facilities (NPS 1998a, 1998b). The EA and the executed finding of no significant impact (FONSI) included the existing building removal and new construction of a 900-square-foot garage, a 2,625-square-foot seed plant, a 500-square-foot stringing plant, and a 7,600-square-foot processing plant, along with a new septic system that would include a new leach field and rehabilitation of the existing leach field. The FONSI also included an annual processing/production limit of 700,000 pounds (oyster weight) to ensure that the new facilities would not create additional growth (and any new negative impacts) in overall oyster production in the estuary (NPS 1998b). The only actions that JOC completed were removal of some mobile homes from the site and installation of a single leach field, which corrected the unpermitted discharge.

While some progress was made by JOC in bringing facilities into compliance, there were still numerous California Coastal Act, county building code, and NPS permit violations left unresolved (Caywood and Hagen 2011). In 2003, CCC issued a Cease and Desist Order (CDO) (No. CCC-03-CD-12) to JOC that required the removal of some unpermitted development from the property (the shucking room and the retail counter, two houses, and two of the four mobile homes), improvement of the wastewater system (which was draining into Drakes Estero), remediation related to the storage of oyster cultivation equipment and disposal of refuse in Drakes Estero and along the shore, and the submittal of a coastal development permit application for after-the-fact authorization for other unpermitted development that included construction of several commercial buildings and a horse paddock; additions to pre-Coastal Act buildings; and permanent placement of a mobile home, three metal storage/refrigeration containers, and an aboveground diesel fuel tank and concrete containment structure (CCC 2003). In September 2003, due to the various unresolved violations, NPS revoked authority for the construction and replacement activities that had been authorized by the 1998 EA and FONSI (NPS 2003c<sup>xv</sup>).

Prior to expiration of its 1979 leases, JOC requested lease extensions for a period of 25 years. In February 2004, a CDFG letter to JOC indicated that “the Department would require that a federal/National Park Service (NPS) lease be in effect concurrently with the state water bottom lease” (CDFG 2004a<sup>xvi</sup>). On March 15, 2004, NPS conveyed legal opinions from the Solicitor’s Office regarding the JOC RUO and



relationship to wilderness to the CDFG Director (NPS 2004c<sup>xvii</sup>). On June 14, 2004, CDFG provided their recommendation to the CFGC stating “The Department recommends approval of the requested lease renewals for a period of twenty-five years, contingent on there being a Federal Reservation for the land use within the Point Reyes National Seashore” (CDFG 2004b<sup>xviii</sup>). On June 18, 2004, NPS sent a letter to CDFG reiterating that “The NPS still believes that any activity in the Estero must also be permitted by the NPS” (NPS 2004d<sup>xix</sup>).

CFGC approved lease renewals to JOC on June 25, 2004, for both Lease M-438-01 and Lease M-438-02, for a 25-year period. This approval was contingent on a concurrent federal RUO for land in the Seashore. These renewals were for the express purpose of cultivating the Pacific and European flat oysters in the previously designated Lease M-438-01 and purple-hinged rock scallops and Manila clams in Lease M-438-02. A series of operational conditions accompany CDFG leases, including methods of cultivation, record keeping, requirements for requesting additional species, and requirements for providing a financial guarantee for cleanup (CDFG 2004d).

## **DRAKES BAY OYSTER COMPANY: 2005 TO PRESENT**

In December 2004, DBOC purchased the assets of JOC, assuming the remaining seven years of the RUO and SUP that NPS had issued to JOC for the well and septic leach field (DBOC 2011f<sup>xx</sup>). There were no changes to the terms of the RUO or to its expiration date. On March 18, 2005, CDFG authorized the transfer of Leases M-438-01 and M-438-02 from JOC to DBOC, which is owned and operated by Kevin and Nancy Lunny (CDFG 2005a, 2005b). The acreages and the shellfish culturing provisions of the leases remained the same. Lease M-438-01, for approximately 1,049 acres of water bottoms within Drakes Estero, allowed for the cultivation of Pacific oysters and European flat oysters, with minimum production limits placed on the oyster harvesting (CDFG 2005a). Lease M-438-02, which is the 1-acre parcel on the west side of Drakes Estero inside the boundary of Lease M-438-01, allowed for the cultivation of purple-hinged rock scallops and Manila clams (CDFG 2005b).

When DBOC purchased the assets of JOC, it also assumed the compliance obligations arising from the CCC Consent Cease and Desist Order issued to JOC (CCC 2003). DBOC has worked with CCC staff to remove some of the unpermitted developments, including the removal of the western portion and the second-floor addition to the processing plant and retail facility, two storage containers, a refrigerated trailer, the seed setting area, the western portion of the storage facility, and a mobile home. However, not all of the unpermitted development had been removed when DBOC completed additional development without a coastal development permit or approval from NPS, including placement of two large containers for shucking/packing/storage and a temporary construction trailer, construction of a processing facility and second leach field, grading and paving within the onshore portions, and placement of oyster culture apparatus in Drakes Estero (CCC 2007b). DBOC also established unauthorized practices on the property (e.g., boat transit outside established channels). CCC and NPS alerted DBOC to the violations, and DBOC agreed to submit a coastal development permit application for all “onshore and offshore” development on the property that required a permit. A second Consent Cease and Desist Order (No. CCC-07-CD-11/CCC-07-CD-04) was issued as a short-term order to allow DBOC operations to continue while DBOC met the remaining requirements for documented violations. The 2007 Cease and Desist Order set time frames for submittal of the coastal development permit application, established agreed-upon conditions of the operations, and identified activities to be avoided until CCC received and approved the

application. The consent order furthermore directed DBOC to take actions and implement protective measures to ensure protection of coastal resources. On November 29, 2007, DBOC signed the consent order to work with CCC and NPS to resolve the violations (CCC 2007b). Even though the 2007 Cease and Desist Order was issued as a short-term order, it currently remains in effect.

In April 2008, DBOC and NPS signed a SUP (NPS Permit No. MISC-8530-6000-8002) that would allow the commercial shellfish operation in Drakes Estero to remain, with provisions, until November 30, 2012, when it expires concurrently with the RUO. The SUP outlines the terms and conditions that apply to DBOC operations, including limits on the amount of shellfish that may be cultivated, limits on the types of facilities that may be constructed, and various measures designed to protect Seashore resources, modeled after mitigation measures defined in CCC Consent Cease and Desist Order (CCC 2007b). The SUP area includes the 1.1 acres of lands and improvements adjacent to the RUO (see figure 1-4) and the waters corresponding to Leases M-438-01 and M-438-02 (see figure 1-3). Additionally, the existing well site and septic field that support the onshore oyster operations were included in the permit. Consistent with the RUO, the SUP was issued to allow for the cultivating, processing, and selling of oysters, as well as the interpretation of oyster cultivation. The conditions and special terms of both the RUO and the SUP can be viewed in appendix A. The issuance of the 2008 SUP did not result in the retroactive approval of facilities and operations that had not been previously approved by NPS, as the 2008 SUP cover page indicates that NEPA compliance was “pending.” NPS and DBOC agreed, through the signing of the SUP, that NPS would prepare a NEPA analysis presenting alternative operating scenarios for DBOC’s operations through November 30, 2012. Before NPS could fully initiate the NEPA document for the 2008 SUP, Congress enacted section 124. Therefore, this EIS is now the vehicle in which NPS is considering different operating scenarios for DBOC.

CDFG leases transferred to DBOC following its purchase of JOC, allowed cultivation of the Pacific oyster, European flat oyster, purple-hinged rock scallop, and Manila clam. The purple-hinged rock scallop and Manila clam were listed as approved species on Lease M-438-02 (CDFG 2005b). Although not approved, JOC also had Kumamoto oysters (*Crassostrea sikamea*) under cultivation. JOC did not report Kumamoto or European flat oysters separately, so the bulk of the reported harvest levels were recorded as the Pacific oyster. While included in Lease M-438-01, there is no record that DBOC has ever produced European flat oysters. DBOC identified and removed the Kumamoto oysters under direct CDFG supervision (DBOC 2008c<sup>xxi</sup>; CDFG 2008b<sup>xxii</sup>). Small numbers of scallops were harvested by the Johnsons in Lease M-438-02. Tax reports do not indicate harvesting of any scallops to date by DBOC.

While CFGC authorized Manila clams within Lease M-438-02 beginning in 1993, there is no record in the annual Proof of Use Reports of tax records of Manila clam harvest. The cultivation of Manila clams within Lease M-438-01 has not been approved by NPS as required by section 4(b)(vi) of the 2008 SUP (NPS 2008b). In spring 2009, DBOC advised CDFG that it believed the 1993 CFGC decision to add Manila clams to Lease M-438-02 was a clerical error, and DBOC requested that Manila clams be added to its Lease M-438-01. In a letter dated December 8, 2009, NPS expressed concerns to the CFGC regarding the expansion of Manila clams within the Seashore’s boundary. Specifically, NPS was concerned about the size of the expansion and lack of environmental review or analysis of risk, the potential for establishment of a nonnative species, and the potential to add substrate for the highly invasive nonnative tunicate, *Didemnum vexillum* (NPS 2009d<sup>xxiii</sup>). On December 10, 2009, CFGC authorized amendment of Lease M-438-01 to include the cultivation of Manila clams, calling it a clerical error (CFGC 2009<sup>xxiv</sup>). In a letter on December 22, 2009, NPS advised DBOC that additional information was required before NPS



could determine whether to give final approval under the SUP, and that cultivation of clams on the larger lease could only occur subsequent to such approval (NPS 2009e<sup>xxv</sup>). DBOC declined to offer any additional information in its response to NPS (DBOC 2009c<sup>xxvi</sup>). The addition of Manila clam cultivation to the area of Lease M-438-01 and outside the boundaries of Lease M-438-02 is not authorized under the NPS SUP.

During the time CDFG and CFGC were reviewing the request for Manila clams in Lease M-438-01, CCC issued DBOC an enforcement notice on September 16, 2009, stating that DBOC was out of compliance with the 2007 Consent Cease and Desist Order because Manila clams were located outside Lease M-438-02 (CCC 2009b<sup>xxvii</sup>). In response to the CCC notice, DBOC agreed to move the Manila clams from Lease M-438-01 to Lease M-438-02. In early December 2009, NPS and CCC issued letters of violation to DBOC for placement of Manila clam bags within one of the harbor seal exclusion areas (NPS 2009c<sup>xxviii</sup>; CCC 2009a<sup>xxix</sup>). In response, DBOC stated that clam bags had been placed within a harbor seal protection area because its global positioning system (GPS) coordinates were misread and the misplaced clams would be immediately removed (DBOC 2009a<sup>xxx</sup>).

From 2009 to 2011, DBOC submitted several requests to CCC, CDFG, and/or NPS for improvements and alterations to the commercial shellfish operation (DBOC 2009b<sup>xxxi</sup>, 2010f<sup>xxxii</sup>, 2010m<sup>xxxiii</sup>, 2010n<sup>xxxiv</sup>, 2011c<sup>xxxv</sup>, 2011e<sup>xxxvi</sup>, 2011g<sup>xxxvii</sup>). On March 30, 2010, CCC forwarded the DBOC proposals to NPS and requested a review of the list of proposed actions that were currently authorized under the DBOC SUP (CCC 2010a<sup>xxxviii</sup>). Although some of the actions proposed in the development plans were authorized by the existing SUP, NPS was not able to fully evaluate the proposed development actions because supporting information such as design plans and other relevant data was not submitted. Several site drawings and development costs have been subsequently provided by DBOC, including an emergency storm damage replacement request in March 2011 (DBOC 2011a<sup>xxxix</sup>, 2011b<sup>xl</sup>). These, along with recent requests for a lease boundary adjustment and an updated site plan, are considered as requests under article 6 of the SUP (NPS 2008b). NPS has reviewed these requests, and many of the requests are considered as elements of alternatives presented in this EIS (see “Chapter 2: Alternatives”).

On September 29, 2011, CCC notified DBOC regarding potential noncompliance with several of the stipulations in the 2007 Consent Cease and Desist Order: “1) marine debris in Drakes Estero and on nearby coastal beaches, especially from abandoned, discarded, or fugitive plastic aquaculture materials; and 2) motorized vessel transit in the lateral sandbar channel near the mouth of the Estero during the seasonal restriction period established for harbor seal pupping sites in this area” (CCC 2011). CCC reaffirmed these continued violations and requested additional information from and meetings with DBOC in a subsequent letter on February 1, 2012 (CCC 2012a<sup>xli</sup>).

On February 17, 2012, DBOC submitted an updated coastal development permit application to CCC for review and approval (DBOC 2012a<sup>xlii</sup>). CCC informed DBOC on March 16, 2012 that this coastal development permit application was “incomplete because there is no evidence of landowner approval of the proposed work, a portion of the permit fee has not been submitted, and you [DBOC] have not provided sufficient detail regarding the additional work” (CCC 2012d). DBOC informed NPS in a letter dated May 7, 2012 that it would limit its current coastal development permit application to existing activities and would apply to CCC for a coastal development permit amendment in the future prior to future development (DBOC 2012c<sup>xliii</sup>). On June 5, 2012, DBOC responded to the NPS’s previous request

for additional information related to consistency with the SUP and provided an updated project description (DBOC 2012b<sup>xliiv</sup>).

In a letter dated July 30, 2012, CCC informed DBOC of its continued noncompliance with several of the stipulations in the 2007 Consent Cease and Desist Order, including unauthorized boat use of the lateral channel during the seasonal closure for harbor seal pupping, unauthorized boat use of the lateral channel to obtain water sampling data, the collection and disposal of marine debris as a result of JOC and DBOC operations, and development within the coastal zone without an approved coastal development permit. CCC noted that DBOC's May 7, 2012 letter to NPS, "discusses development activities that DBOC has pursued without benefit of a CDP" and; therefore, CCC reiterated that "any development in the coastal zone portion of Point Reyes National Seashore requires a CDP from the Commission unless otherwise exempt from permit requirements" (CCC 2012b<sup>xlv</sup>). CCC also notified DBOC that a new Cease and Desist Order is being considered, "Considering the current uncertainty of a new lease and SUP permit being granted to DBOC, the delays in the various proceedings, your [DBOC] apparent confusion over certain terms of the Order, and the continuing difficulties in bringing DBOC operations into compliance with the Coastal Act" (CCC 2012b). On October 24, 2012, CCC notified DBOC that CCC was commencing proceedings for issuance of cease and desist and restoration orders (CCC 2012e<sup>xlvi</sup>). The letter summarized the violation as follows:

Unpermitted development including but not limited to: operation of offshore aquaculture facilities; construction/installation of structures and the performance of ongoing harvesting, processing, sales, and other operations; and violations of Consent Cease and Desist Order No. CCC-07-CD-11 (Drakes Bay Oyster Company) including installation of additional unpermitted development, boat traffic in the lateral sand bar channel near the mouth of the Estero during a seasonal restriction established for harbor seal pupping sites, and discharge of marine debris in the form of abandoned, discarded, or fugitive aquaculture materials. (CCC 2012e)

## THE NEPA PROCESS

NEPA was passed by Congress in 1969 to assure that all branches of government give proper consideration to the environment prior to undertaking any major federal action that could significantly affect it. Environmental reviews under NEPA involve integration of social, environmental, and economic factors within the framework of existing laws, regulations, policies, and agency guidance for project decisions. Although the Secretary's authority under section 124 is "notwithstanding any other provisions of law," the Department has determined that it is helpful to generally follow the procedures of NEPA. The requirements of NEPA as implemented by the Council on Environmental Quality (CEQ), as well as NPS regulations and guidance for NEPA implementation and decision-making (Director's Order 12 and Handbook: *Conservation Planning, Environmental Impact Analysis, and Decision-making* [DO-12]) (NPS 2001b), will therefore guide this environmental review process.



## SCOPING PROCESS AND PUBLIC PARTICIPATION

Scoping is a process that allows the agency to discuss the proposed action with stakeholders, interested and affected parties, and the public, as well as internally with agency personnel. To determine the scope of issues to be analyzed in depth in this EIS, internal meetings were conducted with Seashore staff, three public scoping meetings were held at different locations in the vicinity of the Seashore during the public scoping period, and relevant agency consultations were initiated.

### Internal Scoping

An internal scoping meeting was held in September 2010 to initiate the EIS process and to define the initial scope of the EIS. Attendees included Seashore officials, DOI Solicitor's Office, representatives from NPS Pacific West Region, NPS Environmental Quality Division (EQD), and their contractors. Following the public and agency scoping period described below, the interdisciplinary planning team considered public comments for use in the development and refinement of project purpose and need, issues, impact topics, alternatives, and impact analysis for the EIS.

### Public Scoping and Outreach

The public scoping period was open for a total of 50 days between October 8, 2010, and November 26, 2010. An NPS press release was published by Bay Area news outlets on October 5, 2010, announcing the dates, times, and places of the public scoping meetings. On October 8, 2010, NPS sent a scoping letter to more than 500 interested individuals and organizations notifying them of the opportunity to comment, and the NPS Planning, Environment, and Public Comment (PEPC) web-site was activated as a vehicle for the public to submit comments. The Federal Register published a Notice of Intent (NOI) to prepare an EIS on October 22, 2010 (NPS 2010d). The public comment period officially closed on November 26, 2010. More than 4,000 comment letters were submitted to NPS during the public comment period. On January 31, 2011, NPS posted the Public Comment Analysis Report and all public correspondence on-line at [http://www.nps.gov/pore/parkmgmt/planning\\_dboc\\_sup\\_scoping\\_comments.htm](http://www.nps.gov/pore/parkmgmt/planning_dboc_sup_scoping_comments.htm). Comments received during the public scoping process helped to inform the range of alternatives, as well as the impact topics to be addressed by the EIS. "Chapter 5: Consultation and Coordination" of this EIS provides more details about the public scoping activities, which were an integral part of the planning process for this EIS.

In April 2008, in conjunction with the SUP, DBOC and NPS agreed to a statement of principles (appendix C) that outlined procedures to be followed in the event that a NEPA document need to be prepared for proposed activities associated with the remaining four-year term of the RUO. The statement of principles was executed prior to the enactment of section 124 and prior to the Secretary's decision to use the NEPA process to inform the decision on the possible issuance of a permit under section 124. NPS and DBOC have agreed to apply the statement of principles to this EIS to the extent that it is applicable. In keeping with the statement of principles, NPS met with DBOC prior to the scoping process to discuss DBOC's interest in obtaining a permit under section 124 and to inform DBOC that NPS is initiating an EIS process and would be covering the cost for this new process. As indicated by the statement of principles, DBOC was to prepare a "description of their operations for NEPA evaluation" and that NPS would consider this description in developing the purpose and need for the NEPA document and

alternatives to be considered. DBOC submitted scoping comments and other information regarding its operation during the initial scoping period and in subsequent requests through March 15, 2011. NPS fully considered DBOC's interests in developing the range of alternatives and impact topics that are addressed in this EIS.

The Draft EIS was made available for public review and comment beginning on September 23, 2011 and ending December 9, 2011. The document was made available for review electronically on the NPS PEPC web-site ([www.parkplanning.gov/PORE](http://www.parkplanning.gov/PORE)) and in hard copy at park headquarters, local libraries, and at the public meetings. Hard copies or CDs also could be obtained by contacting the Seashore Superintendent. Three public meetings were held on October 18, 2011 (Point Reyes Station), October 19, 2011 (San Francisco), and October 20, 2011 (Mill Valley). During the 2011 public meetings, several informational posters were displayed to depict the project area, project purpose/need/objectives, the alternatives under consideration, and the resources potentially impacted by the alternatives. Attendees provided written comments during the meeting or had their comments transcribed onto flipcharts. Upon conclusion of the public comment period, all of the comments received at the meetings, entered directly into PEPC, provided via mail, or provided in person at the Seashore headquarters were entered and analyzed in PEPC. During the comment period, 52,473 pieces of correspondence were received, of which 50,040 were form letters (based on 24 distinct master form letters). A summary of public comments received and associated NPS responses are included in appendix F.

## **Agency Scoping and Consultation**

In addition to collecting comments from the public, NPS also initiated scoping with relevant agencies. Letters were sent out to notify the agencies of the intent to begin preparation of the EIS and to solicit agency comments and suggestions regarding the proposed project and its potential environmental effects on resources under their respective jurisdictions (appendix D). The agencies were asked to identify issues that should be analyzed in the EIS, determine the appropriate scope of the environmental analysis, identify potential management actions to be taken should the project commence, and determine whether agency permits or approvals would be required. Four agencies have entered into an agreement with NPS to be cooperating agencies in the development of the EIS: CDFG, USACE, NMFS, and the U.S. Environmental Protection Agency (EPA). Each of these cooperating agencies has special technical expertise related to the issues under consideration in the EIS. The cooperating agencies; tribal government; and several other federal, state, and local agencies were notified of the Draft EIS availability (see the complete "List of Recipients" in chapter 5).

In accordance with NEPA and section 309 of the Clean Air Act, the EPA reviewed the Draft EIS. In their response letter dated December 7, 2011, EPA rated the Draft EIS as "Lack of Objections (LO)." Formal comments on the Draft EIS also were received from NMFS (letter dated November 17, 2011, with clarification on December 9, 2011), USACE (letter dated December 8, 2011), CDFG (letter dated December 20, 2011), USCG (letter dated December 7, 2011), and CCC (letter dated December 12, 2011).

Chapter 5 of this EIS provides more detail about agency consultation and coordination and cooperating agencies.

## REFERENCES USED FOR IMPACT ANALYSIS

As part of the NEPA evaluation process, this EIS uses various sources of information in the analysis of impacts. Primary references are those for which evidentiary support is traceable to a source that complies with recognized standards for data documentation and scientific inquiry. For example, data pertaining directly to the activities and conditions within Drakes Estero were obtained from NPS documents and other sources that have been prepared consistent with NPS standards for scientific and scholarly activities, including relevant peer review. For research conducted in similar settings (but not in Drakes Estero itself), references were taken from peer-reviewed scientific literature. Primary references were directly incorporated into this analysis where such references added clarity to the issues addressed. Secondary references are those for which evidentiary support is not directly traceable to a source that complies with recognized standards for data documentation and scientific inquiry. Secondary references can include documents that have not been subjected to peer review or that do not reflect direct on-site observations or measurements in accordance with a standard protocol for data documentation. Examples of secondary references include presentation slides, field notes, and personal correspondence. This includes some of the information provided by CDFG, DBOC, and members of the public.

A main resource used in development of this EIS is the NPS-commissioned National Research Council (NRC) of the National Academy of Sciences (NAS) report, *Shellfish Mariculture in Drakes Estero, Point Reyes National Seashore, California* (NAS 2009). As stated in the report, the objective was to review scientific evidence at the following levels of inquiry: (1) scientific studies directly related to the impact of oyster mariculture on Drakes Estero, (2) other research on Drakes Estero, (3) research in similar ecosystems, and (4) the compendium of scientific research on bivalve mariculture in coastal estuarine environments from which general conclusions could be drawn. The 2009 NAS report is referred to in section 124, where it is stated that “the Secretary shall take into consideration recommendations of the National Academy of Sciences Report pertaining to shellfish mariculture in Point Reyes National Seashore before modifying any terms and conditions of the extended authorization.” The report provides an intensive review of pertinent scientific literature on this subject. As such, there is much overlap between the literature cited in that document and the references used to support this EIS. Furthermore, the conclusions drawn from the 2009 NAS report are taken into consideration (described under “Independent Reviews of the Information and Data Used in this EIS”).

Additional references beyond those used in the NAS report were considered in the EIS process in order to meet NEPA requirements, which are broader than the research objectives of the NAS report. In addition, since the time of the 2009 NAS report additional research regarding the resources considered in this EIS in similar settings, as well as in Drakes Estero itself, has become available. This research has been considered in this analysis where appropriate. The use of reference materials was also informed by the various reviews of the EIS discussed in the following section. Because the reference material is derived from various sources, relevant documentation was classified into two categories—primary references and secondary references—based on the authority of the sources, as explained above. In general, secondary references were not used for the analysis, unless there was a compelling reason to do so.

By following the above procedures for reviewing and selecting reference material, this EIS is in compliance with the Department of the Interior Departmental Manual part 305, chapter 3, “Integrity of Scientific and Scholarly Activities” (DOI 2011). In particular, this EIS “document[s] the scientific and scholarly findings considered in the decision-making and ensure[s] public access to that information and



supporting data through established Departmental and Bureau procedures—except for information and data that are restricted from disclosure under procedures in accordance with statute, regulation, Executive Order, or Presidential Memorandum” (DOI 2011). Because agency and DBOC correspondence is not readily available to the public, these items are endnoted throughout the EIS, except in instances where a direct quote is provided in the text.

Questions have been raised about the use of the following four references in this EIS: Anima 1990, Anima 1991, Harbin-Ireland 2004, and Wechsler 2004. The NPS has acknowledged that these four references were inappropriately cited in a previous NPS document. The fact that these references were inappropriately cited in a prior NPS document does not affect the integrity of the four references themselves. Each of the four references has been peer reviewed, and each remains a legitimate source for informing the analysis in this EIS. Harbin-Ireland 2004 and Wechsler 2004 are graduate theses that meet the peer review standards, although no subsequent journal articles related to these theses have been published. Wechsler 2004 is described as a preliminary study, and the recent NAS review determined that elements of the study’s methodology and data analysis constrain some EIS interpretations (NAS 2012a). NPS acknowledges the NAS assessment of Wechsler 2004; however, the issues addressed by NAS in 2012 do not affect the fundamental data recorded in the Wechsler study and used in the EIS. These references meet the criteria for primary reference works described above. So that readers of this EIS can readily understand the specific information from these references that informed the NEPA analysis, where they are used, these references have been endnoted as well, except in instances where a direct quote is provided in the text.

## **INDEPENDENT REVIEWS OF THE INFORMATION AND DATA USED IN THIS EIS**

There have been a number of independent reviews of the science cited by the NPS in this EIS. The results of these reviews have been made public. The NPS has considered the findings of each of these reviews during the preparation of the Draft or Final EIS (depending on the release date of the review) and has modified the analysis in the EIS as appropriate.

### **Shellfish Mariculture in Drakes Estero, Point Reyes National Seashore, National Academy of Sciences**

As noted above, a principal resource in the preparation of the EIS is the NPS-commissioned NAS report, *Shellfish Mariculture in Drakes Estero, Point Reyes National Seashore, California* (NAS 2009). The report provides an intensive review of pertinent scientific literature on this subject. As such, there is much overlap between the literature cited in that document and the references used to support this EIS. Furthermore, the conclusions drawn from the 2009 NAS report are taken into consideration and cited where relevant within the EIS. In reflecting on the body of available science, the 2009 NAS report summarizes on page 6 that: “After evaluating the limited scientific literature on Drakes Estero and the relevant research from other areas, the committee concludes that there is a lack of strong scientific evidence that shellfish farming has major adverse ecological effects on Drakes Estero at the current (2008–2009) levels of production and under current (2008–2009) operational practices. . . .” Production levels for 2008–2009 representing the current levels of production referenced by NAS are approximately

450,000 lbs of shellfish, with Manila clams permitted only within the 1-acre Lease M-438-02. The 2009 NAS report does not provide a definition or detection threshold for what a “major” adverse ecological effect would be in this context, nor does it indicate that the NAS use of an impact qualifier (e.g., “major”) is consistent with NEPA standards. It should also be noted that archeological and historical sources that pertain directly to the presence or absence of oysters in Drakes Estero prior to the establishment of an oyster operation in the 1930s were not considered in the NAS study. The information provided by those studies may have a bearing on the decisions to be made.

The 2009 NAS report concludes:

Our committee concludes that this decision on extension of the RUO hinges on the legal interpretation of the legislative mandate rather than a scientific analysis of the impacts of DBOC on the Drakes Estero ecosystem. As such, more scientific study of DBOC operations and Drakes Estero would not necessarily affect National Park Service decisions about the future of oyster farming in the estero. (NAS 2009)

Should the Secretary use his discretionary authority to allow the oyster operation to remain until 2022, the new authorization would be an SUP under section 124. The RUO would not be extended.

### **Mariculture and Harbor Seals in Drakes Estero, California, Marine Mammal Commission**

In July 2009, the Marine Mammal Commission (MMC) initiated a review of the potential effects of human activities, including aquaculture operations, on harbor seals in Drakes Estero. The study was concluded in 2011, and the results of this review are provided in the MMC report, *Mariculture and Harbor Seals in Drakes Estero, California* (2011b). The MMC pursued one primary line of inquiry into the issue of potential human effects on natural habitat in Drakes Estero: whether mariculture operations are adversely affecting harbor seals and, if so, to what extent. To accomplish this, the MMC analyzed available sources of data on the issue, including seal counts and disturbance records from NPS staff and volunteers, photographs, oyster production records, seal mortality observations, and aerial images. In addition, the MMC reviewed the validity of scientific publications that specifically address harbor seals in Drakes Estero, namely, Becker, Press, and Allen (2011). In summarizing the results of the study, MMC (2011b) describes several data gaps and recommends research and management activities to reduce the level of uncertainty surrounding this issue. With respect to sources of information derived from NPS records and research, the MMC provided the following interpretations: (1) due to the variability of seal count data, NPS records by themselves are not sufficient to determine factors that caused changes in seal numbers; (2) statistical procedures used in NPS publications [particularly Becker, Press, and Allen (2011)] were generally appropriate but could be improved; and, (3) Becker, Press, and Allen (2011) provides “...some support for the conclusion that harbor seal habitat-use patterns and mariculture activities in Drakes Estero are at least correlated. However, the data and analyses are not sufficient to demonstrate a causal relationship” (MMC 2011b). As a component of their review, MMC (2011b) conducted some additional statistical analyses based on recommendations from an independent statistician. This included consideration of other potential influences on seals such as environmental conditions and the impacts of an aggressive seal at a nearby colony outside of Drakes Estero. After reviewing the results of these additional analyses, the MMC concluded that their results “...continue to

support the hypothesis that oyster harvest...is at least correlated with seal use of the different haul-out sites within Drakes Estero” (MMC 2011b). A more detailed discussion of the results of the MMC analysis is provided in chapter 4, “Impacts on Wildlife and Wildlife Habitat: Harbor Seals, Methodology.” These results are also used within the impact analyses for each alternative in the “Impacts on Wildlife and Wildlife Habitat: Harbor Seals” section.

### **Final Report on Peer Review of the Science Used in the National Park Service’s Draft Environmental Impact Statement Drakes Bay Oyster Company Special Use Permit, Atkins**

In March 2012, as requested by DOI, Atkins North America (Atkins), an independent consulting firm specializing in peer reviews, completed a peer review of “Chapter 3: Affected Environment” and “Chapter 4: Environmental Consequences” of the Draft EIS to “examine the scientific and technical information and scholarly analysis presented in the document and assess whether: (1) appropriate scientific information was used; (2) reasonable conclusions were drawn from the information; (3) significant information was omitted from consideration; and (4) NPS interpretation of the information is reasonable” (Atkins 2012a). The review focused on marine estuarine ecology and coastal zone management (wetlands, eelgrass, benthic fauna, birds, special-status species), water quality, soundscapes, and socioeconomic resources. Overall, “the reviewers found the analyses to be appropriate, and that there is no fundamental flaw with the larger scientific underpinnings of the DEIS. The identified scientific misinterpretations, or lack of citation of appropriate literature are for the most part minor, and can be rectified if the NPS so wishes. This may also include making some additional adjustments to interpretation, and explicit acknowledgement of the lack of information on some key issues” (Atkins 2012a).

Based on the recommendations of the Atkins review, the Final EIS incorporates additional relevant references to all impact topics, as appropriate. As suggested by Atkins, text has been clarified where appropriate to better represent independent findings and link citations to each reference used. Direct comments from individual reviewers on the Atkins team have not been added to the text of the Final EIS or cited directly, as these comments are recommendations only.

The most critical finding of the Atkins review concerned the topic of socioeconomic resources. Atkins found that the “methods used [in the Draft EIS] to conduct an economic assessment of policy options do not follow accepted economic impact analysis practice” (Atkins 2012a). To enhance the socioeconomic resources sections (Affected Environment and Environmental Consequences), the Final EIS includes a more quantitative analysis of socioeconomic impacts using IMPLAN modeling, a relevant and industry-recognized method for assessing economic impacts. It should be noted that DBOC has requested all financial data related to the shellfish operation be kept confidential (DBOC 2012b<sup>xlvii</sup>). Therefore, the revised socioeconomic resources section does not disclose specific revenue data.

Due to the high level of public interest in the soundscapes section of the Draft EIS and the results of the Atkins review of this impact topic, which found that “there is ample acoustic scientific evidence by which the DEIS can determine that DBOC noise-generating activities have negative impacts on both the human visitor experience and the seashore’s wildlife” (Atkins 2012a), the DOI submitted a letter to Atkins to forward public comments on the Draft EIS provided by Environ International Corporation (as attached to DBOC’s public comment letter, DBOC 2011i, and hereafter referenced as Environ 2011). The DOI letter



also asked the soundscapes reviewer to “clarify his views on the DEIS acoustics chapter so that the National Park Service (NPS) clearly understands his suggestions for improving it” (DOI 2012b<sup>xlviii</sup>).

In response, Atkins provided the requested clarification and noted that “the new data made available by DBOC and ENVIRON during the DEIS comment period provide additional value to the impact assessment process and could usefully be included in the National Park Service’s Final EIS. However Dr. Clark [the Atkins soundscape reviewer], does mention that a full evaluation of these new data (and indeed the situation at Drakes Bay in general) would require new measurements and analysis over an extended period of time. As it stands, Dr. Clark’s original opinion regarding the conclusions he drew of the current DEIS is unchanged” (Atkins 2012b). Therefore, to supplement the soundscapes section in the Final EIS, the data collected onsite by Environ International Corporation has been included in the existing conditions and analysis of impacts. Because Environ did not follow pertinent standards and because the measurement processes and the operating conditions of the equipment were not adequately described<sup>6</sup>, the Environ measurements were compared with reports that document noise levels measured under specified conditions from comparable equipment.

### **Scientific Review of the Draft Environmental Impact Statement: Drakes Bay Oyster Company Special Use Permit, National Research Council, National Academy of Sciences**

A second review was conducted by the NAS. This review occurred as a result of direction from Congress in a committee report accompanying a fiscal year 2012 appropriations act. Congress directed the NAS “to assess the data, analysis, and conclusions in the DEIS in order to ensure there is a solid scientific foundation for the Final Environmental Impact Statement.” Specifically, the NAS was provided with the following statement of task:

... assess the scientific information, analysis, and conclusions presented in the DEIS for Drakes Bay Oyster Company Special Use Permit, and; evaluate whether the peer review of the DEIS conducted by Atkins, North America for the U.S. Department of the Interior, is fundamentally sound and materially sufficient. The committee did not perform an independent evaluation of the environmental impacts of the proposed alternatives, but restricts its findings to the strength of the scientific conclusions reached in the DEIS and to the identification of concerns, if any, not covered in the Atkins peer review. The report focuses on eight of eleven resource categories considered in the DEIS: wetlands, eelgrass, wildlife and wildlife habitat, special-status species, coastal flood zones, soundscapes, water quality, and socioeconomic resources. (NAS 2012a)

The NAS released the results of this review on August 30, 2012 in draft form (“pre-publication”), and the final report was released on September 27, 2012. The NPS provided comments on the pre-publication version released in August, correcting factual errors related to NPS guidelines and suggesting clarifications to the water quality section (NPS 2012c).

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<sup>6</sup> NPS requested clarifying information regarding the Environ measurements from DBOC in a letter dated April 6, 2012. Clarifying information was provided to NPS in DBOC’s June 5, 2012 letter. This information was reviewed; however, it did not adequately describe measurement processes and descriptions of operating conditions.

In general, the NAS found that “there is not an extensive scientific literature on Drakes Estero and research on the potential impacts of shellfish mariculture on the Drakes Estero ecosystem is even sparser. Therefore, the NPS had little primary data on which to base the DEIS and had to rely to a large extent on inference from research conducted in other areas. Although this was the only approach that could be used under the circumstances, it not only made it difficult to differentiate impacts of alternatives B, C, and D, it resulted in a moderate to high level of uncertainty associated with conclusions concerning levels of impact for most of the resource categories reviewed by the committee.” The NAS commented that the use of “two different baselines in assessing the impacts of the no action and action alternatives” also contributed to the level of uncertainty in evaluating the impacts and providing a comparison among alternatives (NAS 2012a). In order to reduce the level of uncertainty in the impact analysis conclusions, the NAS recommended the following items for considering in revising the Draft EIS:

- Re-define levels of impact intensity using criteria that clearly distinguish levels of impact (negligible, minor, moderate and major) that are comparable across levels (e.g., direct and indirect impacts; impacts at individual, population and community levels of organization).
- Qualify each impact intensity conclusion in terms of levels of uncertainty such as those used by the committee.
- Clearly identify and explain all assumptions made in reaching conclusions concerning impact intensities.
- Describe potential alternate conclusions as appropriate.
- Segregate impact assessments for alternative A from alternatives B, C, and D and indicate that the assessments are not comparable due to use of different baselines.
- Use all relevant and available information, especially for water quality and soundscapes, such as additional measurements reported in Volpe (2011); analyze sound levels based on both dBA and unweighted values across a wide frequency range; and consider duty cycles when estimating the fraction of time DBOC activities impact the soundscape.
- Additional mitigation options could be included as possible permit conditions for the action alternatives to reduce impacts, e.g., an option to cease the culture of Manila clams would address some concerns about the establishment of that non-indigenous species in Drakes Estero; impacts of many DBOC practices (i.e., boat use, culture species and techniques, marine debris, soundscape effects) could potentially be reduced by the implementation of appropriate mitigation measures.
- Assess impacts associated with the potential establishment of non-indigenous species as a separate category.
- Provide greater consideration of the potential influence of climate change on DBOC operations and their associated impacts, e.g., rising sea level over the next 10 years could influence the spatial extent of inundation, potentially impacting resource categories such as vegetated tidal wetlands and the coastal flood zone; geographic ranges of warm water marine species are already extending poleward), a trend that could exacerbate problems associated with invasive non-indigenous species, including increasing the potential for establishment of reproductive populations of the nonnative Pacific oyster in Drakes Estero. (NAS 2012a)

The NPS response to each of these recommendations is included in appendix G.

Similar to the Atkins peer review, the NAS also made specific recommendations for improving the use of scientific information to inform the impact analyses. For each resource topic addressed by the NAS report, the NAS reviewed the quality of the information used and the analysis of that information and identified information gaps, where appropriate; made a determination of the reasonableness of the conclusions, assessed the level of uncertainty in making the conclusions, and suggested alternate conclusions; and suggested ways to reduce the level of uncertainty within the analysis. Based on this review, additional references have been reviewed and incorporated into the Final EIS, where applicable. Direct comments and critiques from the NAS committee are generally not cited in the text of the Final EIS. As with any other peer review, comments and critiques have been considered and changes have been made where appropriate. In addition, the general methodology for impact analyses has been revised to clarify how each alternative is assessed and how the conclusions are determined; and to define the area of analysis and the analysis period. The specific methodologies for each impact topic have been updated to clearly indicate what data is used in assessing impacts, where that data came from (research on Drakes Estero or other similar ecosystems), and what data is lacking. The intensity definitions for each impact topic also have been revised to use consistent language and clarify the area affected.

The NAS committee also evaluated whether the Atkins report was “fundamentally sound and materially sufficient” (NAS 2012a). NAS found that the “reviewers selected by Atkins are well-qualified;” however, the experts were “insufficient to address all of the scientific topics covered” by the Draft EIS. More specifically, the NAS committee “felt that additional expertise in water quality, wildlife (e.g., harbor seals, fish), and terrestrial soundscapes would be needed to provide a thorough peer review.” Due to the “limited range of expertise of the reviewers and the constraints placed on the review (limited to DEIS chapters 3 and 4, did not include the intensity definitions or conclusions),” the NAS committee did not consider the Atkins report to be “fundamentally sound and materially sufficient.”

## USGS Photographic Review

Between spring 2007 and spring 2010 more than 250,000 digital photographs were taken from remotely deployed cameras overlooking harbor seal haul-out areas in Drakes Estero. The photographs were taken at one minute intervals. In December 2010, these photographs were posted on the NPS web site at [http://www.nps.gov/pore/parkmgmt/planning\\_reading\\_room\\_photographs\\_videos.htm](http://www.nps.gov/pore/parkmgmt/planning_reading_room_photographs_videos.htm). Because the photographs were not collected using documented protocols and did not meet Departmental standards for a scientific product, the NPS did not rely on the photographs in the Draft EIS. Public comments on the Draft EIS requested that the NPS reconsider whether these photographs were useful in evaluating disturbances to harbor seals. In response to these comments, the NPS initiated a third-party review of the photographs with the U.S. Geological Survey (USGS), in consultation with a harbor seal specialist with the Hubbs-Sea World Research Institute. The USGS issued a report entitled, *Assessment of Photographs from Drakes Estero Wildlife Monitoring Cameras* (Lellis et al. 2012).

The USGS assessment focused on the 2008 harbor seal pupping season, when more than 165,000 photographs were collected from two sites overlooking Drakes Estero between March 14, 2008 and June 23, 2008. The USGS identified a series of limitations to the utility of the photographs, including lack of study design, poor photograph quality, inadequate field of view, incomplete estuary coverage, camera obstructions, and weather.



The USGS concluded that generally the camera focus was too poor and image resolution too low to allow for accurate counts or aging of seals, or to provide enough anatomical detail to quantify postures associated with increased vigilance (e.g., head alerts or other alert behavior). Evaluation of the photographs stitched together into time-lapse videos did allow for documentation of gross disturbance events (e.g., flushing to water or flushing to new areas of the sand bar). The USGS developed time-lapse videos for each camera, each day with the 2008 photographs (191 videos including 103 for Upper Estero Far [UEF] and 88 for Oyster Bar [OB]). The USGS determined that for the approximately 100,000 UEF images, seals could not be discerned due to the low resolution and wide field of view. As a result, the USGS concluded that further evaluation of photographs or videos focused on UEF was unwarranted. The USGS did identify that detailed analysis of the photographs in time-lapse sequence overlooking the OB site could be used to understand seal use of the OB site related to time, tide, and weather, and some coarse detection of disturbance as measured by flushing of seals from resting positions towards or into the water. However, the USGS assessment does not document time, tide, and weather.

The USGS identified 73 instances from the OB videos where human or other unusual stimuli could be identified in the photographs at the same time as seals were hauled out on the sandbars. The USGS assessment identified 10 flushing disturbance events at the OB site in 2008. As noted, due to the poor quality, no other level of disturbance, such as increased vigilance could be detected from the photographs or videos. The USGS assessment attributed a specific stimulus to 6 of the 10 observed flushing disturbance events. Two flushing disturbance events were attributed to boat traffic at nearby sand bars, two were attributed to a kayak using the lateral channel (note kayak was in Drakes Estero in violation of seasonal closure), and two appeared to be related to seabirds landing among the seals. Based on the USGS assessment, the NPS has incorporated some discussion of sources of gross flushing events into chapter 4. Because of quality and study design issues, the photographs are not amenable to use for other types of disturbance such as increased vigilance or alerts.

## **ISSUES AND IMPACT TOPICS**

### **Issues and Impact Topics Retained for Further Analysis**

This EIS analyzes the effects of the actions proposed herein on relevant resources in the context of the laws and policies that apply to NPS management of these resources. Many resources and activities have the potential to be affected by either issuing or not issuing a SUP for continued commercial shellfish operations within the Seashore. These resources were initially identified by NPS staff during internal scoping and were further refined through the public and agency scoping process. Impact topics retained for detailed analysis within this EIS include wetlands and other waters of the U.S., eelgrass, wildlife and wildlife habitat, special-status species - California coast Coho salmon (*Oncorhynchus kisutch*) and central California coast steelhead (*O. mykiss*), coastal flood zones, water quality, soundscapes, wilderness, visitor experience and recreation, socioeconomic resources, and NPS operations. The following text discusses issues/considerations that form the basis for the content in “Chapter 3: Affected Environment,” and the impact topics and detailed analysis presented in “Chapter 4: Environmental Consequences.”

**Wetlands and Other Waters of the U.S.** The identification of wetlands within the project area is necessary to ensure their protection in accordance with federal laws (section 404 of the Clean Water Act [CWA] and the Rivers and Harbors Act of 1899) and state laws (e.g., the California Coastal Act of 1976). NPS *Management Policies 2006* states that NPS will implement a “no net loss of wetlands” policy and will (1) provide leadership and take action to prevent the destruction, loss, or degradation of wetlands; (2) preserve and enhance the natural and beneficial values of wetlands; and (3) avoid direct and indirect support of new construction in wetlands unless there are no practicable alternatives and the proposed action includes all practicable measures to minimize harm to wetlands (NPS 2006d). Guidance related to the management of wetlands is further clarified by Director’s Order 77-1: *Wetland Protection* (DO-77-1) (NPS 2002a). As defined by USACE and USFWS, wetland areas and other waters of the U.S. exist in the project area, both within Drakes Estero and along the shoreline where natural conditions persist. DBOC operations may have the potential to impact these wetlands through placement of materials (such as bags and trays) directly in wetlands, trampling of vegetated wetlands, and shading associated with racks, as well as people walking across mudflats, and propellers and boat hulls scraping the mud bottom. The impact topic of wetlands and other waters of the U.S. is retained for detailed analysis in this EIS.

**Eelgrass.** In Drakes Estero, eelgrass (*Zostera marina*) is the dominant form of submerged aquatic vegetation and is present throughout Drakes Estero in dense beds. Eelgrass beds provide important foraging and feeding ground for many aquatic organisms, they serve as the base of the food web in many coastal habitats, and they perform important environmental functions, such as trapping sediment, taking up excess nutrients, and protecting shorelines from erosion. Eelgrass beds are classified as a type of “special aquatic site,” a category of “Waters of the United States” afforded additional consideration under the Clean Water Act section 404 (b)(1) guidelines developed by the EPA. Special aquatic sites possess characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These sites are recognized as significantly influencing or positively contributing to the overall environmental health or vitality of the entire ecosystem of a region. DBOC operations in Drakes Estero and the eelgrass beds interact “via changes each makes to the immediate environment like altering water flow, sediment structure, light penetration, and nutrient supply. Other environmental changes arising from mariculture come from the addition of structures (e.g., bags, racks, and lines) and disturbances of transportation and culture operations” (NAS 2009). The termination or continuation of these activities related to DBOC operations could beneficially or adversely impact eelgrass. Therefore, the impact topic of eelgrass is retained for detailed analysis in this EIS.

**Wildlife and Wildlife Habitat.** Drakes Estero provides habitat for multiple native wildlife species, including benthic fauna (animals living on or in the submerged substrate), fish, harbor seals, and birds. Drakes Estero also includes privately owned species cultivated by DBOC, as well as nonnative invasive species such as the tunicate, *Didemnum vexillum* and the mud snail, *Batillaria attramentaria*. Commercial shellfish operations could potentially impact these species and their habitat through habitat competition, habitat improvement or degradation, noise and physical disruptions, and introduction of nonnative species. The impact topic of wildlife and wildlife habitat is retained for detailed analysis in this EIS.

**Special-status Species.** The Endangered Species Act (ESA) mandates that all federal agencies consider the potential impacts of their actions on species listed as threatened or endangered in order to protect the species and preserve their habitats. Potential impacts are assessed within an “action” area, which can be larger than individual project areas, and are determined by evaluating the geographic extent of potential environmental changes (i.e., biological, chemical, and physical effects). USFWS and NMFS share

responsibility for implementing the ESA. Per informal consultations with USFWS in 2010 and previous studies, seven federally listed threatened and endangered species and/or their critical habitat were identified for consideration. After further consultation with USFWS and NMFS and further review of the available and relevant scientific literature, only two species and/or their critical habitat were identified as potentially affected by activities within the project/action area. These include central California coast Coho salmon (*Oncorhynchus kisutch*) and central California coast steelhead (*O. mykiss*). The Coho salmon also is a state-listed species. Based on the location of DBOC's offshore operations relative to these fish species and/or their critical habitat, and resultant threats to those protected resources, the impact topic of special-status species is retained for detailed analysis in this EIS. For a description of the five special-status species that were considered but dismissed from further analysis, please see the "Issues and Impact Topics Considered but Dismissed from Further Analysis" section below.

**Coastal Flood Zones.** Pursuant to Director's Order 77-2: *Floodplain Management* (DO-77-2), the NPS must strive to preserve floodplain values and minimize hazardous floodplain conditions (NPS 2003a). Although no formal floodplain mapping has been undertaken at the planning site, a topographic survey was performed at the onshore facilities based on North American Vertical Datum of 1988 (NAVD-88). Direct observations of flooding made it necessary to survey the area for elevations, so the impact topic of coastal flood zones could be reasonably evaluated. The purpose of the survey was to verify the topographic elevations of the onshore features and correlate those elevations to elevations associated with flood events. Further, it has been observed that some buildings associated with DBOC operations have been prone to flooding during high tide and storm events. Within a 2006 CDPH report, it was noted that "during extreme hydrographic conditions, Estero water floods into the oyster company's plant area. Extreme high tides (over 6 feet), rainfall and winds can all combine to bring water over the Estero banks and into the DBOC plant area. This occurs once or twice a year (Kevin Lunny, pers. comm.)" (Baltan 2006). In addition, NOAA identifies regions subject to potential tsunami inundation, and Drakes Estero falls within the tsunami inundation zone (State of California Emergency Management Agency 2009). Placement of structures within the 100-year floodplain is inconsistent with NPS floodplain management policies, and the continued presence of these structures in the floodplain has the potential to impact floodplain values, DBOC facilities, and the safety of those employees living in structures within the coastal flood zone. The impact topic of coastal flood zones is retained for detailed analysis in this EIS.

**Water Quality.** DBOC commercial shellfish operations within and adjacent to Drakes Estero have the potential to impact both surface and groundwater quality. Nonpoint sources of pollution specific to land development and the commercial shellfish operations include onshore impervious stormwater runoff, boat operation, pulse disturbances to the Estero substrate from maintaining oyster racks and placing/overturning/removing bottom bags in Drakes Estero, accidental spill of fuel/oil, and accidental spill/leaks of wastewater from underground septic tanks. In addition, water used to clean the oysters and other discharges from sources used in the cultivation process may contribute to water quality impacts. Floating debris (plastic tubing, bags, piping, etc.) associated with the commercial shellfish operation may also impact water quality. As identified during public scoping, shellfish cultivation in Drakes Estero (specifically the presence of filter-feeding organisms) may result in beneficial impacts on water quality. The impact topic of water quality is retained for detailed analysis in this EIS.

**Soundscapes.** In accordance with NPS *Management Policies 2006* and Director's Order 47: *Soundscape Preservation and Noise Management* (DO-47), an important part of the NPS mission is preservation of natural soundscapes within units of the national park system (NPS 2006d, 2000). Natural soundscapes



“encompass all the natural sounds that occur in parks, including the physical capacity for transmitting those natural sounds and the interrelationships among park natural sounds of different frequencies and volumes. Natural sounds occur within and beyond the range of sounds that humans can perceive, and they can be transmitted through air, water, or solid materials” (NPS 2006d). As identified during public scoping, components of DBOC operations, such as motorized boats and onshore equipment, create noise that may impact park visitors and wildlife and disturb the natural soundscape of the area. The impact topic of soundscapes is retained for detailed analysis in this EIS.

**Wilderness.** A wilderness area is defined, in part, as “an area where the earth and its community of life are untrammelled by man, where man himself is a visitor who does not remain. . . . An area of undeveloped Federal land retaining its primeval character and influence, without permanent improvements or human habitation” (PL 88-577). Pursuant to PL 94-544 and 94-567, Congress designated the waters of Drakes Estero as potential wilderness. Drakes Estero was designated as potential wilderness rather than full wilderness due to the presence of the commercial oyster operation, a nonconforming use. Cessation of DBOC’s commercial operations upon expiration of existing authorizations would allow the congressionally designated potential wilderness to be converted to congressionally designated wilderness. Conversely, should a new SUP be issued, the area would remain as congressionally designated potential wilderness for another 10 years. The impact topic of wilderness is retained for detailed analysis in this EIS.

**Visitor Experience and Recreation.** The NPS strives to provide opportunities for forms of enjoyment that are uniquely suited and appropriate to the natural and cultural resources found in park units. During public scoping it became evident that some visitors to the Seashore view the commercial shellfish operation as an integral part of their visit, while other visitors view the commercial operation as an adverse impact on their enjoyment of solitude and the natural setting and resources of the site, as well as their wilderness experience. For those visitors that view the commercial shellfish operation as an integral part of their visit to the Seashore, expiration of existing authorizations may reduce the satisfaction of these visitors, because they would no longer be able to purchase oysters or interact with DBOC staff. On the other hand, if a new 10-year SUP is issued to DBOC to continue its commercial shellfish operation, Seashore visitors seeking to experience the wilderness of Drakes Estero, as defined by the Wilderness Act of 1964 as, “outstanding opportunities for solitude or a primitive and unconfined type of recreation,” would be adversely affected. Therefore, the impact topic of visitor experience and recreation is retained for detailed analysis in this EIS.

**Socioeconomic Resources.** As part of the NEPA process, the NPS assesses the impacts of each alternative on socioeconomic resources. Expiration of the existing RUO and associated SUP and termination of DBOC’s commercial operations could result in adverse impacts on the current staff and on DBOC, as well as on the regional economy and statewide shellfish production. The impact topic of socioeconomic resources is retained for detailed analysis in this EIS.

**NPS Operations.** Each of the proposed alternatives could result in changes to Seashore operations and infrastructure near and within Drakes Estero. Seashore staff and available funding are key elements to promoting and protecting natural and cultural resources within the Seashore. Issuance of a new SUP to DBOC would require improved SUP monitoring and enforcement by Seashore staff, including review of proposed changes at DBOC and coordination with other state and local agencies. The impact topic of NPS operations is retained for detailed analysis in this EIS.

## Issues and Impact Topics Considered but Dismissed from Further Analysis

The following impact topics were considered but dismissed from further analysis because either (a) the resources do not exist in the project area or would not be impacted by the project or (b) impacts would be less than minor<sup>7</sup>. Dismissed topics include vegetation, special-status species – silverspot butterfly (*Speyeria zerene myrtleae*), California red-legged frog (*Rana aurora draytonii*), leatherback sea turtle (*Dermochelys coriacea*), western snowy plover (*Charadrius alexandrinus nivosus*), and California least tern (*Sternula antillarum browni*), water quantity, lightscapes, air quality, climate change and greenhouse gas emissions (carbon footprint), local food, geological resources, paleontological resources, cultural resources, and environmental justice. A brief rationale for the dismissal of each impact topic is provided below.

**Vegetation.** Vegetation cover types within the Drakes Estero watershed include wetlands, coastal dune, coastal scrub, grassland, pasture, and riparian woodland. Coastal scrub and wetlands are the only vegetation types that exist within the immediate project area. Several rare plants (appendix E) are known to exist within these habitat types. Wetlands are discussed as a separate impact topic, because there is the potential for these resources to be impacted by the alternatives considered in this EIS. The coastal scrub vegetation cover type is present around the onshore DBOC facilities and along the main access road. The proposed alternatives would not directly impact the coastal scrub vegetation. The rare plants known to exist in the area (based on inventory data provided by the NPS) would not be impacted by the project as they are located within areas that are outside the area of direct and indirect impacts, including some of the adjacent coastal scrub areas and within vegetated intertidal (NPS 2010f). Therefore, the impact topic of vegetation is dismissed from further analysis in this EIS.

**Special-status Species.** As mentioned above, seven federally listed threatened and endangered species were identified for consideration. Five of these species have been dismissed from further analysis in the EIS due to a lack of designated critical habitat in the project/action area, unconfirmed presence of the species in the project/action area, or the potential for less than minor impacts on the species and/or their critical habitat. These include Myrtle's silverspot butterfly (*Speyeria zerene myrtleae*), California red-legged frog (*Rana aurora draytonii*), leatherback sea turtle (*Dermochelys coriacea*), western snowy plover (*Charadrius alexandrinus nivosus*), and California least tern (*Sternula antillarum browni*). A brief explanation of the justification for dismissal for each species is provided below.

*Myrtle's Silverspot Butterfly (Speyeria zerene myrtleae).* Myrtle's silverspot butterfly was federally listed as endangered in 1992 (USFWS 1992). The historic range of the butterfly in California is believed to have extended from the mouth of the Russian River in Sonoma County to Point Año Nuevo in San Mateo County (Launer et al. 1992). Typical habitat for Myrtle's silverspot butterfly and its host plant includes coastal dunes, coastal scrub, or coastal prairies that are protected from wind, at elevations from sea level to 1,000 feet, up to 3 miles inland (USFWS 1998).

Plant species at the Seashore known to attract adult Myrtle's silverspot butterfly include western dog violet (*Viola adunca*), curly-leaved monardella (*Monardella undulata*), yellow sand-verbena (*Abronia latifolia*), seaside daisy (*Erigeron glaucus*), bull thistle (*Cirsium vulgare*), gum plant (*Grindelia* spp.), and mule ears (*Wyethia* spp.). Of these, the western dog violet serves as the host plant (i.e., the plant on which

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<sup>7</sup> Minor impacts are generally defined as being slight but detectable, typically short-term and localized.

females lay eggs) and is the only known food plant used by butterfly larva once they emerge from eggs. Other flowering plants provide nectar sources for adult butterflies (USFWS 2009).

Coastal scrub habitat surrounds the DBOC onshore facilities and entry road. Surveys conducted in 2003 verified the presence of butterfly populations within the Seashore and the butterfly has been documented on grasslands surrounding the project area (USFWS 2009). However, records do not indicate that Myrtle's silverspot butterfly exists within the project/action area. If species were present in the project area, threats such as the potential for vehicle strikes/mortality would be less than minor due to the slow speeds and low usage of the access road.

*California Red-legged Frog (Rana aurora draytonii)*. The California red-legged frog was listed as federally threatened in 1996 (USFWS 1996). Revised critical habitat for this species was designated in 2010 (USFWS 2010). The frog requires a variety of habitats for normal biological activity, including aquatic breeding areas, riparian habitat, and upland dispersal habitats used during migration between breeding areas. Aquatic breeding habitats include pools and backwaters within streams and creeks, ponds, marshes, springs, sag ponds, dune ponds, and lagoons. Additionally, California red-legged frogs frequently breed in artificial impoundments, such as stock ponds (USFWS 2002b). Historically, the frog has been observed at elevations ranging from sea level to 5,200 feet above sea level, but it has been extirpated (eliminated) in 70 percent of its former range.

Since 1993, the U.S. Geological Survey Biological Resources Division has conducted surveys of aquatic amphibian habitat in the Seashore. The surveys have identified more than 120 California red-legged frog breeding sites within the Seashore, supporting a total adult population of several thousand frogs (NPS 2007a). Approximately two-thirds of the breeding sites are on ranch lands, with a large proportion occurring at stock ponds used by ranchers. Based on survey data, important habitat for red-legged frogs also includes streams with relatively low gradients that have late-season water flow or water retention in pools. On Point Reyes Peninsula, such creeks support relatively few of the documented occurrences of the frogs, but may serve as important connectors to other breeding and refuge habitats. Examples of Seashore streams with this habitat are found in the Drakes Estero watershed.

California red-legged frogs are documented in East Schooner, Home Ranch, Limantour, Glenbrook, Muddy Hollow, and Laguna creeks (USFWS 2008). In addition, the federally designated critical habitat encompasses the landward boundary of Drakes Estero. However, recent surveys and records do not indicate that the California red-legged frog exists within the project/action area. Due to the saline conditions of Drakes Estero, it is unlikely that the project/action area would serve as habitat for the California red-legged frog. Further, if the species were found to be present in the project area, the proposed actions of the onshore operations would be less than minor due to limited actions outside the existing developed footprint.

*Leatherback Sea Turtle (Dermochelys coriacea)*. The leatherback sea turtle was listed as federally endangered in 1970 (USFWS 1970). Critical habitat was designated by NMFS in 2012 and although Drakes Estero is included in the geographic area designated as critical habitat (NMFS 2012a), further consultation with NMFS revealed that critical habitat for leatherback turtles does not extend into estuarine habitat (NMFS 2012b). As an estuary, Drakes Estero is therefore not included in the critical habitat designated for leatherback sea turtles. Leatherback sea turtle occurrences have not been recorded within

the project/action area. Based on the nesting and foraging habitat requirements, it is unlikely that the turtles would use the shallow estuarine or land habitats associated with Drakes Estero.

*Western Snowy Plover (Charadrius alexandrinus nivosus)*. Western snowy plover was listed as federally threatened in 1993 (USFWS 1993). In 2005, the USFWS designated 12,145 acres of critical habitat for western snowy plover, including portions of Marin County. Based on federal reassessment of conservation needs proposed, updates to western snowy plover critical habitat were recommended in 2010, increasing the total acres of critical habitat to 28,261. Habitat for the plover includes beaches, dry mudflats, dry salt flats, and sandy shores. The plover nests on the ground in broad open spaces with sparse clumps of vegetation that allow protective cover for chicks. Nests also occur beside or under protective objects (Page et al. 2009). The plover's diet includes small insects, small crustaceans, and other minute vertebrates (Terres 1980).

The western snowy plover uses the Point Reyes Peninsula as wintering and nesting habitat. During the 1980s, nesting took place along the entire Great Beach, on the far east end of Drakes Beach near the mouth of Drakes Estero, and at Limantour Spit. In recent years, erosion along the southern portion of Great Beach has diminished the upper beach area such that the entire beach can be washed by waves. Nesting is occurring on the northern portion of this beach, between the North Beach parking area and Kehoe Beach, which is backed by extensive dunes. Between 2001 and 2005, snowy plover nests were observed on this northern portion of Great Beach. Plovers also nest along the western edge of Abbotts Lagoon.

Limantour Spit, the point at which Drakes Estero meets Drakes Bay, has historically been used as nesting habitat by plovers; however, no nests have been observed there since 2000 (Peterlein 2009). The nearest current areas of critical habitat include Limantour Spit and all the Seashore beaches lining the northwest shore of the Point Reyes Peninsula (USFWS 2011a). Despite the close proximity of critical habitat and nesting locations/habitat, there are no known records of western snowy plover observations within the project/action area, and potential impacts of proposed operations are considered negligible.

*California Least Tern (Sternula antillarum browni)*. The California least tern was listed as federally endangered in 1970 and state endangered in 1971 (USFWS 1985b). Least terns nest in loose colonies on relatively open beaches with no vegetation, along lagoon or estuary margins. Foraging habitat includes shallow estuaries or lagoons with abundant populations of small fish or other small prey. Terns usually dive for their prey and rest or loaf on sandy beaches and mudflats (NatureServe 2011). While no least terns are known to exist within the Seashore (including the project area), potentially suitable habitat types do exist. However, the nearest known population is located in the San Francisco Bay Area.

**Water Quantity.** Impacts on fresh water quantity are related to the amount of ground water DBOC uses for wastewater and potable uses. The amount of well water used by DBOC does not noticeably impact the availability of fresh water in the area and was therefore not retained as an impact topic for further analysis in the EIS.

**Lightscaapes.** In accordance with NPS *Management Policies 2006*, the NPS strives to preserve natural ambient landscapes and other values that exist in the absence of human-caused light (NPS 2006d). There are two pole-mounted overhead lights within the project area to provide safety lighting after dark. Low levels of light also emanate from the DBOC residences. DBOC does not perform commercial shellfish



operations after dark. In addition, visitor use of the area after dark is minimal. These low levels of light do not have a noticeable impact on natural resources or visitor enjoyment. Should DBOC require additional lighting in the future (if an action alternative is selected), then new lighting shall be designed to protect and preserve the night sky/darkness and minimize light pollution in Drakes Estero, as indicated by the SUP (NPS 2008b). Given the proximity of the project area to the San Francisco metropolitan area, the lightscape within the Seashore has already been degraded by the light pollution surrounding San Francisco. The impact topic of lightscapes is dismissed from further analysis in the EIS.

**Air Quality.** The Seashore, a Class I airshed, is located within the San Francisco Bay nonattainment areas for 8-hour ozone, 1-hour ozone, and fine particulate matter (less than 2.5 micrometers) (PM<sub>2.5</sub>) as defined by the National Ambient Air Quality Standards set forth in the Clean Air Act (EPA 2011) and further specified by the Bay Area Air Quality Management District (BAAQMD 2010). The primary air pollutant sources associated with the San Francisco Bay Area are related to urban activities (i.e., commuting). Ongoing activities within the Seashore have a minimal contribution to air pollution in the nonattainment area.

Volatile organic compounds (VOCs) are a general class of compounds containing hydrogen and carbon and are a precursor to the formation of the pollutant ozone. While concentrations of VOCs in the atmosphere are not generally measured, ground-level ozone is measured and used to assess potential health effects. When combustion temperatures are extremely high, as in automobile engines, atmospheric nitrogen gas may combine with oxygen gas to form various oxides of nitrogen. Of these, nitric oxide (NO) and nitrogen dioxide (NO<sub>2</sub>) are the most significant air pollutants. This group of pollutants is generally referred to as nitrogen oxides or NO<sub>x</sub>. Nitric oxide is relatively harmless to humans but quickly converts to NO<sub>2</sub>. Nitrogen dioxide has been found to be a lung irritant and can lead to respiratory illnesses. Nitrogen oxides, along with VOCs, are also precursors to ozone formation. Emissions of VOCs and NO<sub>x</sub> react in the presence of heat and sunlight to form ozone in the atmosphere. Accordingly, ozone is regulated as a regional pollutant and is not assessed on a project-specific basis.

The “de minimis” emissions limits for general conformity with federal actions (i.e., “thresholds”) for nonattainment ozone and particulate matter are presented in table 1-1 below. Because ozone is a by-product of volatile organic compounds and nitrogen oxide, threshold levels for ozone are based on threshold levels of ozone precursors: VOCs and NO<sub>x</sub>. The threshold levels for VOCs and NO<sub>x</sub> are 54 pounds/day and 10 tons/year. Threshold levels for PM<sub>2.5</sub> also are 54 pounds/day and 10 tons/year (BAAQMD 2010).

DBOC’s direct and indirect emissions contribution to nonattainment was estimated for all activities (i.e., motorboats, maintenance equipment, employee vehicles, and trucks for transporting the shellfish). The results indicate that all DBOC emissions are equal to or below 3.5 tons per year for all nonattainment pollutants (table 1-1). The calculated levels for DBOC emissions related to NO<sub>x</sub> are 2 to 4 pounds/day and 0.3 to 0.5 tons/year. The calculated levels for reactive organic gas (ROG) are 11 to 24 pounds/day and 1.6 to 3.5 tons/year. The calculated levels for both ozone precursors, ROG<sup>8</sup> and NO<sub>x</sub>, from DBOC operations fall well below threshold levels. The levels of PM<sub>2.5</sub> discharge from DBOC boat emissions are considered to be negligible.

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<sup>8</sup> According to EPA, VOC and ROG are synonymous. VOC excludes methane and ethane and ROG, as used by California, only references methane.

TABLE 1-1. NONATTAINMENT AREA DE MINIMIS LEVELS AND DBOC ESTIMATES

| Pollutant                        | De Minimis<br>Threshold Level<br>(pounds/day) | De Minimis<br>Threshold Level<br>(tons/year) | DBOC Estimate<br>(pounds/day) | DBOC Estimate<br>(tons/year) |
|----------------------------------|---|--|-------------------------------|------------------------------|
| Ozone (VOCs or NO <sub>x</sub> ) |   |  | 11-24                         | 1.6-3.5                      |
| Serious NAAs                     |   | 50   |                               |                              |
| Severe NAAs                      |   | 25   |                               |                              |
| Extreme NAAs                     | 54  | 10   |                               |                              |
| NO <sub>x</sub>                  | 54  | 10   | 2-4                           | 0.3-0.5                      |
| PM <sub>2.5</sub>                |   |  |                               |                              |
| Direct Emissions                 | 54  | 10   | negligible                    | negligible                   |

Source: 40 CFR 93.153; DBOC [Lunny], pers. comm., 2011h

Notes: VOCs = volatile organic compounds

NO<sub>x</sub> = nitrogen oxide

NAAs = nonattainment areas

PM<sub>2.5</sub> = particulate matter <2.5 micrometers

DBOC operations meet general conformity requirements because their regional emissions are well below the de minimis threshold levels established by federal and state general conformity requirements. If the no-action alternative is selected, emission levels would be well below levels calculated for DBOC operations, as all motorized activity in the water and onshore would cease with the exception of vehicles using the access road for the kayak launch and occasional administrative use of motorized boats, which would be subject to evaluation under minimum requirements and minimum tool determination processes as required by the Wilderness Act. Under the action alternatives, DBOC emissions, as estimated above, would continue at similar levels. Based on the calculated levels, the impact topic of air quality is dismissed from detailed analysis in this EIS.

**Climate Change and Greenhouse Gas Emissions (Carbon Footprint).** Climate change refers to any significant change in average climatic conditions (such as mean temperature, precipitation, or wind) or variability (such as seasonality, storm frequency, etc.) lasting for an extended period (decades or longer). Recent reports by the U.S. Climate Change Science Program, the NAS, and the United Nations Intergovernmental Panel on Climate Change (IPCC) provide clear evidence that climate change is occurring and will accelerate in the coming decades. There is strong evidence that global climate change is being driven by human activities worldwide, primarily the burning of fossil fuels and tropical deforestation. These activities release carbon dioxide and other heat-trapping gases, commonly called “greenhouse gases,” into the atmosphere (IPCC 2007a, 2007b, 2007c, 2007d).

There are two aspects of climate change that must be considered in an environmental impact analysis:

- Human impact on climate change: i.e., through actions, the potential to increase or decrease emissions of greenhouse gases that contribute to climate change
- The impact of climate change on humans: i.e., how the resources that are managed are likely to change in response to changing climate conditions, and how that changes or otherwise affects management actions and the impacts of those actions on the resource

Some of the activities associated with DBOC operations result in fossil fuel consumption (e.g., motorboats within Drakes Estero, trucks associated with the transportation of shellfish, and vehicles

carrying visitors to the area). Equipment used to maintain DBOC facilities, access roads, and parking areas also consume fossil fuels. However, greenhouse gas emissions associated with any of the alternatives involving issuing a new SUP would likely be negligible.

Additionally, some comments submitted during public scoping suggested that the quantity of greenhouse gas emissions (the carbon footprint) associated with oyster consumption would increase if a new SUP was not issued to DBOC (the no-action alternative) because of the loss of the local food source. Some comments suggested that without DBOC, the distance oysters would be transported to meet demand in the San Francisco Bay Area would greatly increase, thus increasing the overall greenhouse gas emissions. It is not clear how the shellfish market would respond should this local source cease operations. Local demand could be met in the future by various means. Oysters could be shipped in from outside the local area, which would increase the carbon footprint associated with transporting the product. Conversely, other local commercial shellfish operations may increase their production and distribution of oysters to the local market, which would result in a carbon footprint similar to existing conditions. Oyster production in California, as a whole, appears to be increasing at a rate greater than DBOC's production. For example, as described in chapter 3, in 2010, DBOC produced 585,277 pounds of shucked oyster meat (6.89 million oysters), a 28 percent increase over 2009 production levels. During this same period, the California oyster market increased 43 percent. An increase in Pacific oyster production in Humboldt Bay was the primary contributor to this change (the California Pacific oyster market increased 48 percent, by weight, between 2009 and 2010) (CDFG 2011e). Based on this information, it is likely that at least some portion of the current DBOC production could be accommodated by other operations in the state of California. Agencies are not required to engage in speculation or analyze indirect effects that are highly uncertain (CEQ 1981, Q18 [48 Fed. Reg. 18027]). Because there is no certainty regarding how the shellfish market and demand would respond to the proposed action, impacts from global carbon emissions cannot be meaningfully and/or quantifiably analyzed. While greenhouse gas emissions associated with the no-action alternative may potentially be greater due to increased transportation distances, they are also likely to be negligible in comparison to local, regional, and national greenhouse gas emissions.

In addition, the effects of climate change on park resources over the 10-year planning horizon for this EIS are likely to be negligible. Issues associated with climate change's impact on the Seashore resources (rising sea temperatures, sea level rise, ocean acidification, etc.) are addressed in applicable sections of chapters 3 and 4. The contribution of the actions contemplated in this EIS on climate change is likely to be negligible and is dismissed from further analysis.

**Local Food.** DBOC grows and processes oysters and clams onsite and supplies these products to the surrounding communities. Approximately 40 percent of these products are sold to onsite customers, 40 percent is sold directly to local markets and restaurants, 18 percent is sold to Tomales Bay shellfish growers, and 2 percent is sold through a wholesale seafood distributor based in San Francisco (DBOC 2012b<sup>xlix</sup>). DBOC imports shellfish in the form of larvae (and seed) from CDFG-certified sources in compliance with a "Long-term Permit to Import Live Aquatic Animals into California" issued by CDFG. CDFG-certified hatcheries are located in Hawaii and along the U.S. west coast. DBOC's 2006 proof of use report shows that 1 million Manila clam seeds were acquired from Kona Coast Shellfish in Hawaii. For Pacific oyster larvae and seed, CDFG generally uses hatcheries on the west coast. For instance, for 2011, DBOC holds permits to import larvae/seed from Taylor Shellfish Farms in Washington (Permit MR-L-10-029) and Whiskey Creek Shellfish Hatchery in Oregon (Permit MR-L-10-028). However, DBOC has also used seed from Coast Seafoods Company in California and Kona Coast Shellfish in Hawaii.

While many people in the Bay Area enjoy these natural foods, other proteins, such as beef, poultry, or finfish, also are produced in the vicinity of DBOC. In addition, other shellfish operations, such as the Tomales Bay Oyster Company and the Hog Island Oyster Company, both of which are in Tomales Bay proximal to DBOC (approximately 15-20 driving miles), contribute to the local oyster and clam supply. Similar to DBOC, these operations offer fresh shellfish for purchase onsite and to restaurants in the region. In addition to proteins, many other types of local foods are produced in Marin County and the Bay Area including dairy products, fruits, vegetables, and products derived from these food types. In 2011, aquaculture (oysters, mussels, and clams) accounted for 7 percent of the total agricultural production in Marin County. In comparison, livestock products such as milk and wool comprised 45 percent of the county total, while livestock (the animals themselves) and miscellaneous made up 28 percent (MCDA 2012). On average, DBOC has produced 513,152 pounds of seafood annually over the last 5 years, representing approximately 58 percent of the oysters in Marin County over this period (CDFG 2011e). As described further in the “Socioeconomic Resources” section of chapter 3, DBOC’s contribution to the county shellfish market declined since 2007 to approximately 50 percent, therefore, it is estimated that of the aquaculture produced in Marin County in 2011, approximately 50 percent was produced by DBOC, equivalent to approximately 3.5 percent of the overall agricultural production of the county (CDFG 2011e; MCDA 2012). Based on this information, any change in DBOC’s contribution to the local food supply would likely be negligible. For these reasons, the impact topic of local food has been dismissed from further analysis in the EIS.

**Geological Resources.** *NPS Management Policies 2006* directs the NPS to preserve and protect geologic resources as integral components of park natural systems (NPS 2006d). Cultivation of shellfish within Drakes Estero and the processing facilities on the land are unlikely to affect geologic processes and resources, including soils and topography. Current sediment transport processes, which may be impacted by actions proposed in this EIS, are analyzed in the water quality section of this EIS. The impact topic of geologic resources is dismissed from further analysis in the EIS.

**Paleontological Resources.** Paleontological resources are defined as “resources such as fossilized plants, animals, or their traces, including both organic and mineralized remains in body or trace form” (NPS 2006d). *NPS Management Policies 2006* directs the NPS to preserve and protect paleontological resources in terms of the geologic data associated with the resource to provide information about the ancient environment (NPS 2006d). Paleontological resources have been identified within the Seashore, including concretions near the project area. These resources are outside the immediate project area and therefore would not be impacted by the proposed actions. Additionally, it is unlikely that activities associated with the proposed actions would disturb any undiscovered paleontological resources, as ground disturbance is not proposed outside the development area. The impact topic of paleontological resources is dismissed from further analysis in the EIS.

**Cultural Resources.** The NPS categorizes cultural resources as archeological resources, cultural landscapes, ethnographic resources, historic and prehistoric structures, and museum collections (NPS 2006d). The National Historic Preservation Act (NHPA) mandates preservation programs in every federal agency and identifies the NPS as the lead historic preservation agency. NHPA requires federal agencies to identify properties eligible for listing on the National Register of Historic Places (National Register) and recognizes five property types: districts, sites, buildings, structures, and objects. Cultural landscapes are usually classified as either districts or sites, depending upon their character. While parks may contain properties or activities that are old, the NPS Cultural Resources program manages properties found



eligible for the National Register. Use of this site over time by customers and park visitors is not considered a historic or cultural resource. For a discussion of site use by visitors, see the “Visitor Experience and Recreation” section.

Under section 106 of the NHPA and implementing regulations 36 CFR 800, federal agencies must take into account the effects of their undertakings on significant historic properties and afford State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP) an opportunity to comment as appropriate. The agency must seek ways to avoid, minimize or mitigate any adverse effects on historic properties. Concurrent with the NEPA process, a section 106 review is being conducted to determine whether the actions proposed in this EIS would result in an adverse impact on such resources. As part of this process, the California SHPO has been consulted regarding the eligibility of DBOC facilities for listing on the National Register. On April 1, 2011, the NPS notified the SHPO (and copied ACHP) of the intent to use this EIS process to meet section 106 consultation requirements. On October 18, 2012, the ACHP confirmed that they had reviewed the documentation provided and that their involvement in the section 106 review was no longer necessary (ACHP 2012, see appendix D). In a letter dated October 29, 2012, SHPO concurred with a finding of no adverse effects, although it was noted that unanticipated discovery or change in project description may require additional consultation under 36 CFR part 800 (SHPO 2012, see appendix D).

During a meeting with The Federated Indians of Graton Rancheria representative on July 14, 2011, the NPS also notified the Tribe that it planned to use this EIS process to meet section 106 consultation requirements. This was followed up by letter on August 10, 2011 (NPS 2011g). The Tribe responded in a letter dated August 29, 2011, noting their concurrence with the “request to use the EIS process to meet Section 106 ‘government to government’ consultation requirements” (FIGR 2011). Subsequently, on January 9, 2012, the NPS submitted a letter to The Federated Indians of Graton Rancheria to coordinate ongoing consultation and arrange a meeting to discuss the next steps for the proposed action, as related to section 106 consultation. Consultation with the Tribe was concluded on August 13, 2012, when The Federated Indians of Graton Rancheria submitted a letter of concurrence to NPS stating, “each of the four alternatives presented in the DEIS will have ‘no adverse effect’ on cultural resources under the standards set forth in 36 CFR 800.8(c)(1).” See appendix D for copies of these letters.

A Determination of Eligibility (DOE) was prepared for DBOC onshore and offshore facilities (Caywood and Hagen 2011). The DOE found that while the oyster-growing operation in Drakes Estero is significantly associated with the rebirth and development of the California oyster industry, which began in the 1930s, the property is ineligible for listing in the National Register because it lacks historic integrity. The period of historic significance for the site extends from 1957, when Charles W. Johnson assumed control of the Schooner Bay plant and the state oyster allotment, to about 1965, when his company successfully adapted Japanese off-bottom growing methods to the specific conditions of Drakes Estero. DOE project personnel conducted the documentation and assessment of the oyster farm in Drakes Estero as a potential cultural landscape.

Of the seven aspects of integrity (location, setting, materials, workmanship, design, feeling and association), the property retains for the most part, integrity of location, setting, and association. The processing plant and the racks in the estero are in their original locations, and the property’s setting—the pastoral landscape surrounding the bay—has been little altered since the early 1930s (Caywood and Hagen 2011). With regard to integrity of materials, workmanship, and design, however, virtually all of the resources in the plant have

been modified through structural additions and/or the application of modern materials. Some are in such poor condition that their structural integrity is threatened. Since the 1960s new materials and structures have been added, older structures removed or destroyed, and existing structures modified extensively. In addition, the design of the plant operation has been altered. Over the years processing systems and equipment have been removed, and the entire canning operation moved offsite due to health department concerns, then reestablished in a modern, hygienic shipping container. “Finally, the combination of alterations, including a general lack of material and design integrity, as well as the addition of modern structures, has altered the appearance of the Johnson Oyster Company operation, which in turn adversely affects the property’s integrity of feeling” (Caywood and Hagen 2011).

Today, the plant bears little resemblance to the facility of the early 1960s. In a letter dated April 5, 2011, the NPS submitted the DOE to the SHPO, requesting concurrence with the finding that the property is ineligible for listing on the National Register. The NPS received a response from the SHPO on August 4, 2011 (see appendix D) in which the SHPO concurred with the NPS determination that none of the facilities associated with DBOC’s operation are eligible for listing on the National Register (SHPO 2011).

*Archeological Resources.* Archeological resources are the remains of past human activity and records documenting the scientific or scholarly analysis of these remains. For over 2,000 years, humans have inhabited the Point Reyes Peninsula, employing its rich resources and modifying aspects of the landscape to meet their changing needs. Approximately 100 Coast Miwok archeological sites document a culture that was an integral part of the ecosystem (Sadin 2007). One known archeological site (CA-MRN-296) exists within the project area and is associated with the Coast Miwok whose descendants are members of The Federated Indians of Graton Rancheria, a federally recognized Tribe. The site is a contributing resource in a draft National Register of Historic Places district nomination for indigenous archeological sites within the Seashore. Under all proposed action alternatives, the known archeological site would be excluded from the SUP boundary. As with other sites in the Seashore, there is potential for site disturbance as a result of unauthorized access. Regular site monitoring and management, which is afforded all archeological sites in the Seashore, would be conducted to reduce potential impacts on this site.

Under all alternatives, if unknown archeological resources are discovered, the Seashore’s standard protocol for inadvertent discoveries would apply. The Cultural Resources Management Division would be notified immediately and work in the immediate area would cease until the discovery is evaluated by a qualified archeologist. The discovery process defined by 36 CFR 800.13, the implementing regulations for NHPA (16 U.S.C. 470), would be applied. Evaluation of the discovery’s significance would include consultation as appropriate with The Federated Indians of Graton Rancheria, SHPO, and the ACHP. In the event that human remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered the process defined by 43 CFR 10.4-5, the implementing regulations of the Native American Graves Protection and Repatriation Act (25 U.S.C. 3001), would be applied. NPS response to any discovery of human remains or sacred objects would include but not necessarily be limited to immediate notification of the Seashore’s Superintendent and Cultural Resources Division, cessation of work in the immediate vicinity, protecting the objects of discovery, notifying and consulting with The Federated Indians of Graton Rancheria, and preparing a written plan of action.

For the purposes of section 106 of the NHPA, impacts under any of the alternatives would result in a determination of no adverse effect. For all ground disturbing activities within the onshore areas of DBOC, archeological identification studies, including construction monitoring by a qualified archeologist, may be

required to determine the presence of unknown or buried archeological resources. The impact topic of archeological resources is dismissed from further analysis in the EIS.

*Cultural Landscapes.* According to NPS-28: *Cultural Resource Management Guideline* (NPS 2002b), a cultural landscape is a reflection of human adaptation and use of natural resources and is often expressed in the way land is organized and divided, patterns of settlement, land use, systems of circulation, and the types of structures that are built. The character of a cultural landscape is defined both by physical materials, such as roads, buildings, walls, and vegetation, and by use reflecting cultural values and traditions. The oyster-growing facilities lie within but do not contribute to the significance of the Point Reyes Ranches Historic District, which was determined eligible for the National Register (Historical Research Associates, Inc. 2008). As described above, DBOC facilities were evaluated separately for listing on the National Register. While significantly associated with the California oyster industry from 1957-65, the property is ineligible for listing in the National Register because it lacks historic integrity. For the purposes of section 106 of the NHPA, impacts under any of the alternatives would result in a determination of no adverse effect. The impact topic of cultural landscapes is considered but dismissed from further analysis in the EIS.

*Historic Structures.* A historic structure is defined by NPS-28 as “a constructed work, usually immovable by nature or design, consciously created to serve some human act” (NPS 2002b). As described above, a DOE was conducted to identify properties within the project area that are eligible for listing on the National Register. While the Seashore preserves over 300 historic structures, such as the Point Reyes Lighthouse, listed in the National Register, and the Point Reyes Lifeboat Station, a National Historic Landmark, none of the structures within the project area are eligible for listing on the National Register. For purposes of section 106 of the NHPA, impacts under any of the alternatives would result in a determination of no adverse effect. The impact topic of historic structures is considered but dismissed from further analysis in the EIS.

*Ethnographic Resources and Sacred Sites.* An ethnographic resource is defined as any “site, structure, object, landscape, or natural resource feature assigned traditional legendary, religious, subsistence, or other significance in the cultural system of a group traditionally associated with it” (NPS 2002b). The Federated Indians of Graton Rancheria are culturally affiliated with the Seashore and have expressed concern that their cultural legacy may be impacted if a new SUP is issued to DBOC (FIGR 2007). However, no traditional cultural properties have been identified within the project area. One Coast Miwok archeological site has been identified within the project area; however, the project would not affect this site, as described above under “Archeological Resources.” The impact topic of ethnographic resources and sacred sites is considered but dismissed from further analysis in the EIS.

*Indian Trust Resources.* The federal Indian Trust is a legally enforceable obligation on the part of the United States to protect tribal lands, assets, resources, and treaty rights, and it creates a duty to carry out the mandates of federal laws with respect to Native American Tribes. Of the federally recognized Tribes pursuant to PL 103-454, 108 Stat. 4791, The Federated Indians of Graton Rancheria/Coast Miwok is the only Tribe affiliated with the Seashore. However, there are no known Indian Trust resources in the study area, and the lands composing the Seashore are not held in trust by the Secretary for the benefit of Indians. The impact topic of Indian Trust resources is considered but dismissed from further analysis in the EIS.

*Museum Collections.* A museum collection is an assemblage of objects, works of art, historic documents, and/or natural history specimens collected according to a rational scheme and maintained so that they can be preserved, studied, and interpreted for public benefit (NPS 2002b). The project area does

not include any museum collection or objects. The impact topic of museum collections is considered but dismissed from further analysis in the EIS.

**Environmental Justice.** Executive Order 12898, “General Actions to Address Environmental Justice in Minority Populations and Low-income Populations,” requires all federal agencies to identify and address the disproportionately high and/or adverse human health or environmental impacts of their programs and policies on minorities and low-income populations and communities (EPA 1994). The guidance provides six principles for consideration of environmental justice, which are: 1) composition of affected area and whether there are low-income populations, minority populations, or Indian tribes, 2) public health and industry data for assessment of environmental hazards, 3) recognition of interrelated cultural, social, occupational, historical, or economic factors that could amplify environmental effects, 4) encouragement of public participation and accommodations to overcome linguistic, cultural, institutional, geographic, and other barriers, 5) meaningful community representation with awareness of diverse constituencies, and 6) soliciting tribal representation. Applicable principles are discussed in the following paragraphs.

The NPS notes that many of the 31 employees at DBOC individually qualify as low-income and/or minority. However, under the thresholds established by the Executive Order, the employees themselves do not constitute a low-income or minority population, other than as part of the community in which DBOC is located. Adverse impacts to DBOC employees related to the proposed alternatives are limited to socioeconomic impacts. While not appropriate as a topic for environmental justice, economic impacts of the proposed action at the Inverness CDP, Marin County, and State of California level are retained for analysis in this EIS under socioeconomic resources. Existing socioeconomic conditions and the potential impacts associated with the proposed alternatives are described in the affected environment and environmental consequences chapters (chapters 3 and 4) of this EIS.

CEQ’s “Environmental Justice Guidance Under the National Environmental Policy Act” provides guidance to federal agencies on how to determine the presence of low-income and minority populations within an appropriate unit of geographic analysis. The guidance defines the identification of a minority population where either “(a) the minority population of the affected area exceeds 50 percent or (b) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis” (CEQ 1997).

For the purposes of this EIS, the affected area (area of analysis) for environmental justice is Inverness Census Designated Place (CDP). This is consistent with the scale used to describe the socioeconomic impacts of the project on a local level. Marin County is used for comparative purposes, as it is the next-largest scale used to describe socioeconomic impacts. According to 2010 census data, the total population of Inverness is 1,304. As shown in table 3-7 in chapter 3, the minority population of Inverness CDP make up 7.1 percent and of the total population. Six percent of the CDP’s population is of Hispanic descent.

In comparison, the minority population of Marin County, which is used herein as the general population, is 20 percent, with a total population of 252,409. Marin County residents of Hispanic descent make up 15.5 percent of the county’s population. It should be noted that the concept of race is different than the concept of Hispanic origin. Therefore, the U.S. Census collects separate data on Hispanic and minority populations. Specifically, Hispanic is not considered a minority population by the U.S. Census and must be considered independently from race. For example, nearly half of the Marin County residents who



reported to be Hispanic in 2010 indicated that their race was “white only.” The remaining 54 percent of the Hispanics within the county specified another race, stated they were of “some other race”, or indicated they were of two or more races (U.S. Census Bureau 2010). Those Hispanics that reported to be “white only” are not considered minority. Similarly, 51 percent of the Hispanic population in Inverness CDP reported to be “white only” (U.S. Census Bureau 2010). As such, it is not appropriate to add the Hispanic and minority percentages together to achieve an overall minority percentage. This would result in double counting and an inflation of the actual minority population in Inverness CDP and Marin County. In accordance with CEQ regulations and thresholds, Inverness CDP does not meet the criteria of an environmental justice population based on its minority population, as the minority population is well below both the CEQ threshold of 50 percent and is not meaningfully greater than the minority population percentage in the general population. Figure 1-5 shows the Inverness CDP and its minority composition. It should be noted that to illustrate the general distribution of minority populations within the affected area, figure 1-5 identifies census blocks with minority populations that exceed the CEQ threshold of 50 percent. Evaluating minority populations at this scale would inflate the intensity of impacts; therefore, Inverness CDP has been determined to be the more appropriate scale, and the block data is provided for informational purposes only.

A similar analysis was used to determine whether the affected area constitutes a low-income environmental justice population. CEQ’s “Environmental Justice Guidance Under the National Environmental Policy Act” specifies, “Because CEQ guidance does not provide a specific threshold to identify low-income populations, U.S. Census 2010 data was compared to thresholds defined by the Metropolitan Transportation Commission (MTC) during development of their Transportation Improvement Program for the San Francisco Bay Area. The MTC established a low-income threshold of 30 percent, whereby any community whose population consists of more than 30 percent low-income residents would be considered a “community of concern” (MTC 2010). According to 2010 census data, the low-income population of Inverness CDP make up 12.8 percent and of the CDP’s total population. In comparison, the low-income population of Marin County is 7.0 percent. As such, in accordance with CEQ regulations and thresholds, Inverness CDP does not meet the criteria of an environmental justice population based on its low-income population, as the population meeting the criteria for low-income is well below the regional threshold of 30 percent. Figure 1-6 shows the distribution of low-income populations within Inverness CDP. Similar to figure 1-5, figure 1-6 illustrates the general distribution of low-income populations within the affected area using data for census block group with low-income populations that exceed the regional threshold of 30 percent. Evaluating low-income populations at this scale would inflate the intensity of impacts; therefore, Inverness CDP has been determined to be the more appropriate scale, and the block group data is provided for informational purposes only.

As stated by DBOC, 22 employees are Hispanic or Latino and most also fall into the category of low-income (DBOC 2011i<sup>1</sup>). However, under the applicable thresholds and as described above, the employees themselves do not constitute a low-income or minority population.

The second factor identified in the Executive Order does not apply here because the public health impacts from this project are remote and negligible. For example, NPS considered air quality as an impact topic in the EIS but dismissed it from further consideration when it determined that emissions from the alternatives would be below the “de minimis” thresholds for San Francisco Bay Area nonattainment areas (pages 41-42, above).